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ABSTRACT

Prepared by the Department of the Interior, this teaching guide is for the instructors' use in teaching a first aid course. Six fundamental areas include: (1) Artificial Respiration, (2) Control of Bleeding, (3) Physical Shock, (4) Open Wounds, Closed Wounds, and Burns, (5) Fractures and Dislocations, and (6) Transportation. A complete presentation is given with key points suggested for inserting the 73 visuals that accompany this document. The visuals could be used as they are with an opaque projector or used to make transparencies. Space for the instructor's notes and objective questions and answers are provided for each area. (Author)

VT014002

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FIRST AID INSTRUCTION COURSE

December 1970

UNITED STATES DEPARTMENT OF THE INTERIOR / Bureau of Mines

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FIRST AID Instruction Course

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Transparency No.	*Title*
1	Nose, Throat & Windpipe
2	Lung Structure
3	Breathing
12	The Circulatory System
15	Pressure Point
17	Head and Neck
18	Arm and Shoulder
19	Leg and Foot
22	The Nervous System
23	Causes of Shock

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Artificial Respiration

FIRST FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: Two Hours

ARTIFICIAL RESPIRATION

The First Fundamental of First Aid

We breathe automatically, almost involuntarily. With each breath, we take in a portion of the air around us, strip it of its life-giving oxygen and expel it again. The whole process takes from four to five seconds in the average adult.

The oxygen we take from the air sustains life. And, while we are able to survive without food or water for a period of time, our bodies cannot live without an uninterrupted supply of oxygen.

When breathing stops for some reason, our source of oxygen is cut off. In some cases, death follows quickly. But the body is a tough organism. If the stoppage is caused by an accident which has not damaged the vital organs of the body – especially the heart – there is an excellent chance for survival. It depends on the ability to force oxygen-rich air into the lungs where the body's systems can use it. This is accomplished through *artificial respiration*, a means of imitating the natural breathing process.

In this unit, the most effective methods of artificial respiration have been outlined. It includes a functional description of the breathing process and the organs involved, an explanation of common causes for the cessation of breathing, and instruction in the methods used to restore breathing.

In the instructor's outline which follows, the important topics have been listed in a logical order of presentation. Supporting visuals (transparencies for overhead projection) have been provided, along with suggested demonstrations and student exercises. If he follows the guidelines provided here, the instructor will have little trouble getting across the principles and techniques used in artificial respiration.

Instructor's Notes

Suggested Comments and Order of Presentation

I. The Respiratory System

A. Oxygen is essential to human life; all living tissue depends for life on the oxygen carried by the blood.

1. Oxygen is found in the air around us; it enters the body each time we take a breath.

2. Any interference with, or stoppage of breathing will cause a dangerous shortage of oxygen throughout the body. If this isn't corrected, death may result.

B. To understand how artificial respiration works – and why it works – you should know something about the system of organs used in the breathing process.

1. This system is the *respiratory system* and is made up of three parts:

a. The air passage (nose, throat and windpipe);

b. The lungs;

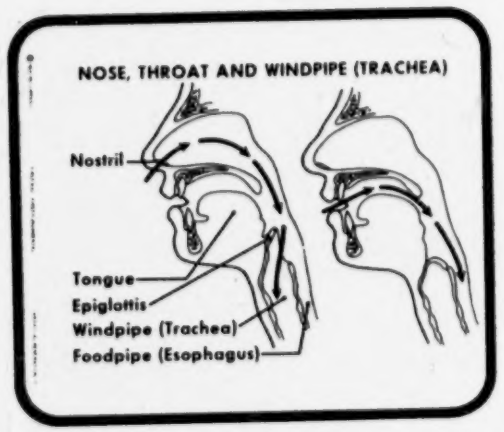
c. A flexible diaphragm in the chest.

2. In this course, we will use the term "respiration" when referring to the breathing process.

a. Each respiration involves two separate acts:

(1) Inhalation – taking in fresh, oxygen-enriched air through the air passage into the lungs;

Instructor's Notes



Visual No. 1
"Mouth and Throat"

Place the transparency on the projector and turn on the lamp as you begin your discussion of the air passage. Working on the surface of the transparency with a pointer, trace the correct course of air through the nose, throat and windpipe. Point out the epiglottis in both illustrations, calling attention to its position.*

*When pointing out elements in a visual, lay the tip of a pencil or pen on the surface of the transparency. The silhouette will show on the screen and direct attention to the area you are discussing.

Suggested Comments and Order of Presentation

(2) Exhalation – expelling used air from the lungs through the air passage.

[Use visual here.]

C. It will be helpful to take a close look at the organs used in respiration and their functions.

1. During both inhalation and exhalation, air passes through the nose, throat and windpipe.

   a. As it passes through the nose, it is moistened and filtered by the membranes within the nose.

   b. At the lower end of the throat, there are two openings, one in front of the other.

      (1) The front opening leads to the lungs. It is called the *trachea* or windpipe.

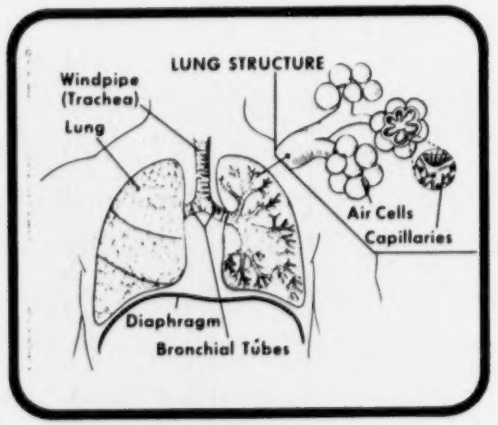
      (2) Behind the windpipe is a second opening leading to the stomach. This is the *esophagus* or foodpipe.

2. At the top of the windpipe is a flap, the *epiglottis*, which closes over the windpipe when a person swallows to prevent food or liquid from entering it.

   a. When a person is unconscious, this flap may fail to act.

   b. For this reason, it is important that no solids or liquids be given to an unconscious person; otherwise, they may enter the windpipe and cause strangulation.

Instructor's Notes



Visual No. 2

"Lung Structure"

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Suggested Comments and Order of Presentation

c. If the victim is lying on his back, his tongue may fall back on the epiglottis and close the windpipe. This can prevent air from reaching the lungs.

(1) Always see that the tongue is pulled forward and the chin extended when a person is unconscious or when breathing is difficult.

[Use visual here.]

3. The windpipe extends into the chest cavity where it divides into the two *bronchial* tubes, one leading to each lung.

a. After entering the lungs, the tubes keep dividing and redividing, like the limbs of a tree, until they become very small.

b. Eventually, these branches of the bronchial tubes end in groups of air cells resembling small bunches of grapes.

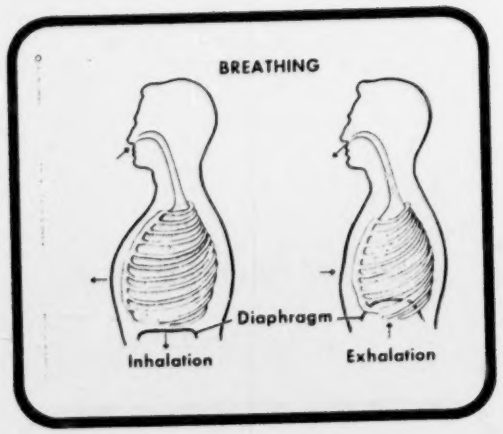
(1) Each thin-walled air cell is surrounded by a network of thread-like blood vessles called *capillaries*.

(2) Oxygen is absorbed into the blood through the walls of the cells, and distributed to all parts of the body.

(3) At the same time, *carbon dioxide*, a waste product of the body, is carried back to the lungs in the blood and given into the air within the cells.

(4) The discarded carbon dioxide passes from the air cells in the air breathed out of the lungs.

Instructor's Notes



Visual No. 3

"Breathing"

Point out the position of the chest and diaphragm during inhalation and exhalation.

Suggested Comments and Order of Presentation

[Use visual here.]

D. These organs come into play with each respiration.

1. At inhalation, the muscles in the chest expand the rib cage and increase the capacity of the chest.

   a. When the chest expands, a flexible diaphragm at the bottom of the rib cage is lowered, creating a slight vacuum.

   b. Air rushes in through the air passage and into the lungs to fill this vacuum.

2. At exhalation, the muscles relax, allowing the chest to shrink again.

   a. The falling rib cage bows the diaphragm and puts pressure on the air-filled lungs.

   b. This pressure forces air out of the lungs and up through the air passage.

E. This cycle of breathing takes place 12 to 15 times per minute in a person at rest. Each respiration uses 25 to 30 cubic inches of air.

Instructor's Notes

Suggested Comments and Order of Presentation

II. Principles of Artificial Respiration

A. Artificial respiration is the process of causing air to flow into and from the lungs when natural breathing has ceased . . . or when it is irregular or feeble.

1. It is important to understand that even when breathing has stopped, the heart may continue to function, circulating blood through the body.

a. Life can be sustained in this situation if fresh air is forced into the lungs so the blood may receive oxygen.

b. In many cases, this can be accomplished by artificial respiration.

[Use visual here.]

B. Certain principles of artificial respiration must be kept in mind when using any of the methods you will be shown in this course.

1. Don't waste *time*! Begin artificial respiration at once.

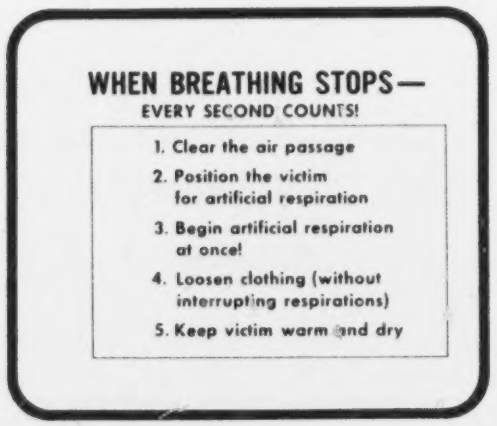
a. Do not take time to move the victim unless the place is unsafe for the victim and you, the rescuer.

b. Do not delay to loosen the victim's clothes, to warm him, or to administer stimulants.

2. The victim's position is important.

a. The proper position depends on the method of artificial respiration used.

b. It is generally best to incline the victim's body slightly (head lower) to permit drainage of fluids from the air passage.



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Visual No. 4

"When Breathing Stops —"

Instructor's Notes

Suggested Comments and Order of Presentation

3. Before you begin artificial respiration, *the air passage must be clear.*

   a. Remove from the victim's mouth all foreign objects (false teeth, tobacco, gum and any loose material).

   b. See that the victim's tongue is forward and the chin extended.

4. Immediately after beginning artificial respiration, loosen any tight clothing about the victim's neck, chest or waist.

   a. Keep the victim warm by covering him with blankets, loose material or other material. *It is important to prevent the lowering of body temperature.*

5. Continue artificial respiration steadily and without interruption until:

   a. The victim begins to breathe spontaneously;

   b. Or until a doctor pronounces the victim dead;

   c. Or until rigor mortis sets in.

6. If the victim begins to breathe of his own accord, adjust your timing to his breathing rhythm. Do not fight his attempts to breathe.

7. The victim should always be treated for shock – positioned properly and kept warm.

8. After breathing has begun, watch the victim closely; it may stop again. In that case, you will need to begin artificial respiration immediately.

9. If it is necessary to move the victim before he is breathing normally (due to extreme weather conditions or other dangers), continue artificial respiration while he is being moved.

Instructor's Notes

Visual No. 5

"Oxygen: A Supplement . . ."

Stress the importance of safety when using oxygen.

If an oxygen container is available, demonstrate the proper method of opening and adjusting the valve. You may want to show the students how to improvise a mask.

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Suggested Comments and Order of Presentation

C. Administering Oxygen

1. Giving oxygen to the victim is *not* a substitute for artificial respiration; it is a supplement to be used in addition to regular methods of artificial respiration.

   a. Oxygen is especially useful when the supply of fresh air is inadequate, as is likely when the victim has been breathing poisonous gases.

   b. When oxygen is administered, manual artificial respiration should be continued until the victim begins to breathe normally.

[Use visual here.]

2. Oxygen, when it is available, is normally in compressed form in an oxygen bottle or cylinder.

   a. There is a valve at the top of most oxygen containers which can be opened by hand, releasing a steady flow of oxygen.

   b. It is important to open the valve slowly, with the oxygen flow *directed away from yourself and the victim*.

   c. When a moderate flow has been established, the stream of oxygen should be directed past the victim's nose.

      (1) If the equipment includes an inhaler or mask, it should be fitted over the victim's nose and mouth.

      (2) A cap or piece of cloth may be used as an improvised mask to confine the oxygen to the face of the victim when an inhaler is not available.

Instructor's Notes

Suggested Comments and Order of Presentation

d. No smoking or open flame should be allowed in the area where oxygen is being used. Oxygen promotes rapid combustion, and fire is always a danger.

D. Treatment after Recovery

1. When the victim has begun to breathe normally, there are several steps which should be taken to avoid a recurrence of breathing problems:

a. Keep the patient down. To avoid a strain on his heart, do not allow him to sit up or stand after he has been revived.

b. If he must be moved, carry him on a stretcher.

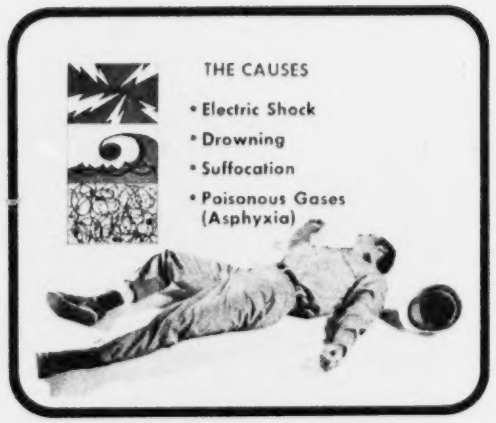
c. When the patient is fully conscious, slowly give him a stimulant.

(1) One teaspoon of aromatic spirits of ammonia in a half glass of water may be used as a stimulant.

(2) If the patient desires, allow him to sip slowly from a container of warm tea or coffee.

d. Keep the patient warm and continue to treat him for shock.

Instructor's Notes



Visual No. 6

"The Causes"

Use a *revelation shield* to present this visual. With a piece of paper or cardboard, cover the headings not yet discussed. Then, as each new subject is introduced, slide this "shield" down on the transparency, exposing the appropriate information. This will keep your students with you and discourage them from reading ahead while you're discussing an earlier topic.

Suggested Comments and Order of Presentation

III. Causes of Respiratory Arrest (a cessation of breathing)

A. Breathing may be stopped as a result of a variety of serious accidents. The most common causes are:

[Use visual here.]

1. Electric shock;
2. Drowning;
3. Suffocation;
4. Poisonous gases.

B. Each type of accident results in a different set of symptoms in the victim, and requires special treatment.

C. Electric shock

1. Accidental contact with electric current can paralyze the nerve centers that control breathing and cause it to stop.
2. The symptoms of electric shock are:
   a. A sudden loss of consciousness;
   b. An absence of respiration (breathing);
   c. Weak pulse;
   d. Possible burns on the body at the point of contact.

3. Treatment should begin immediately.

   a. If the victim is free from the electrical contact, start artificial respiration at once.

   b. If the victim is still in contact with the electric current, rescue him at once.

   c. *Protect yourself* when rescuing the victim:

      (1) If the switch for the current is near, turn it off immediately.

      (2) Stand on a dry board, thick dry paper or similar dry nonconductive material.

      (3) Use a nonconducting material over your hands as insulation when pulling the victim away from the current. A dry coat, shirt or heavy rag will work well.

D. Drowning

   1. Drowning is a form of asphyxia, since the supply of air to the lungs is cut off by water.

      a. This can result in an immediate lack of oxygen in the body.

   2. The symptoms of drowning are:

      a. A loss of consciousness;

      b. An absence of breathing;

      c. Water in the throat and lungs.

Instructor's Notes

Suggested Comments and Order of Presentation

3. Treatment should begin at once. Remove the victim from the water as quickly as possible and start artificial respiration immediately.

   a. Even though the supply of oxygen is cut off by water, there is a small reserve in the air cells of the lungs, in the blood, and in the tissues. This reserve can sustain life briefly.

   b. *But this reserve is exhausted quickly*; therefore, artificial respiration must begin immediately.

      (1) Forcing air into the lungs during artificial respiration tends to remove the water.

   c. Care should be taken to see that the nose and mouth of the victim *are lower than his chest* and that they are free of obstructions.

      (1) This position will help prevent water from re-entering the air passage.

E. Suffocation or Asphyxiation

   1. Suffocation occurs when there is a blockage of the windpipe (trachea).

      a. Breathing harmful gases such as carbon monoxide can also result in suffocation.

   2. Symptoms of suffocation are:

      a. A loss of consciousness;

      b. An absence of breathing;

      c. A weak and rapid pulse;

d. A bluish or darkened color to the lips and earlobes;

e. Dilation of the pupils of the eyes.

3. Treatment should begin at once.

a. When the cause of suffocation is a blockage of the windpipe, begin by removing any obstructions from the air passage.

b. When the air passage is clear, give artificial respiration immediately.

c. If the cause is the inhalation of dangerous gases, remove the victim from the area quickly, then give artificial respiration.

(1) While rescuing the victim, protect yourself with the proper equipment.

Instructor's Notes

Suggested Comments and Order of Presentation

IV. Methods of Artificial Respiration

A. There are several methods – and combinations of methods – used to give artificial respiration. All are effective; some are easier to learn and give, some are more effective in specific situations.

B. Four methods will be taught in this course:

1. Mouth-to-mouth resuscitation;
2. The Holger-Nielsen (back-pressure, arm-lift) method;
3. The Shafer (prone-pressure) method; and
4. The Silvester method.

C. *Mouth-to-mouth resuscitation* is considered the most efficient and practical method of artificial respiration because it provides more air to the lungs than other techniques.

1. It has the advantage of providing enough pressure to inflate the victim's lungs immediately.
2. It also enables you to judge the volume, pressure, and timing of efforts necessary to inflate the lungs – more accurately than possible with other methods.

Instructor's Notes

Visual No. 7

"Mouth-to-Mouth Resuscitation"

When using this transparency, point out the position of the head and neck, the pinched nostrils and the mouth contact.

You may want to encourage a discussion of the students' feelings about mouth-to-mouth contact. It is important that these considerations be put aside if possible when life is at stake.

Suggested Comments and Order of Presentation

[Use visual here.]

3. The *position* of the victim and operator is important to this method. The victim's head and neck *must* be properly extended during respiration to allow an adequate passage in the throat for air to enter the lungs.

   a. Place the victim on his back.

   b. Remove all foreign objects from the victim's mouth and throat.

   c. Lift up under the neck and tilt the crown of the head backwards.

   d. Pull the lower jaw so the chin points straight up.

      (1) This pulls the tongue forward, opening the air passage. Sometimes, the victim will resume breathing as soon as this has been done.

4. Begin resuscitation immediately. Here are the steps used in mouth-to-mouth resuscitation:

   a. Pinch the nostrils together to prevent the loss of air through the nose during resuscitation;

   b. Inhale deeply.

   c. Place your mouth tightly over the victim's mouth (over mouth and nose of small children) and blow into the air passage until the victim's chest rises.

      (1) Remember to *hold the chin up* at all times.

   d. Remove your mouth and let the victim exhale.

      (1) Turn and listen for the return flow of air which indicates the exchange of air in the lungs.

Demonstrate the techniques for the students. Then allow them to practice with any available appliances (Resusci-Anne, masks, etc.).

e. Repeat this operation 12 to 15 times a minute for an adult (20 times for a small child).

(1) Deep breaths should be used for an adult victim; less for a child. For infants, gentle puffs – emptying the cheeks – should be sufficient.

5. The first efforts will indicate whether air is reaching the victim's lungs. If the chest does not rise, or if there is no return flow of air, an obstruction exists.

a. Recheck the head and jaw position.

b. Breathe into the victim's mouth more forcefully.

c. If the obstruction is still present, quickly turn the victim on his side and administer several sharp blows between the shoulder blades to dislodge possible foreign matter.

(1) Check the victim's mouth and sweep it clean with the fingers.

d. Resume artificial respiration at once.

6. Bulging of the stomach may occur during respiration when the epiglottis (flap) is closed and air is being diverted.

a. If this occurs, press gently on the stomach between the naval and breast bone. This will cause the air to be released through the mouth.

7. In certain cases, *mouth-to-nose* resuscitation may be required. This is the case when the victim's jaw is clenched shut as it often is in cases of drowning.

a. The mouth-to-nose technique is similar to mouth-to-mouth except that the lips are sealed with the index finger of the hand on the chin. The jaw is pulled forward with the other hand.

Instructor's Notes

Visual No. 8

"Holger-Nielsen Method"

Suggested Comments and Order of Presentation

8. Continue artificial respiration until the victim begins to breathe for himself; or until a physician pronounces him dead; or until rigor mortis sets in.

   a. When the victim is revived, he should be kept quiet until he is breathing normally.

   b. He should be kept covered and treated for shock until suitable transportation is available.

D. *The Holger-Nielsen (back-pressure, arm-lift) method* relies on manual pressures to imitate the normal rising and falling of the chest.

[Use visual here.]

1. The *position* of the victim and operator is important.

   a. Place the victim face down, with his elbows bent and his hands placed (one upon the other) under his head.

   b. Turn his head slightly to one side, with his cheek on his hand.

   c. Kneel just above the head of the victim with one knee on either side of the head.

   d. Place your hands flat on the victim's back just below an imaginary line between the armpits, with the tips of the thumbs just touching and the fingers spread downward and outward.

2. Artificial respiration takes place in two phases: Compression and Expansion.

   a. During the compression phase, rock forward until the arms are almost vertical, allowing the weight of your upper body to exert slow, steady pressure downward upon the hands.

Instructor's Notes

Suggested Comments and Order of Presentation

(1) Keep your elbows straight, putting pressure directly downward on the victim's back.

(2) This forces air out of the lungs.

b. Release the pressure during the expansion phase. Gently rock back away from the victim, taking your weight off his back.

c. Next, place your hands on the victim's arms at or just above the elbows, drawing them toward you.

(1) Apply enough lift during this phase to feel resistance and tension in the victim's shoulders.

(2) Keep your own elbows straight while rocking backward and draw the victim's elbows up and toward you.

d. Then lower them gently to the ground. This completes the expansion phase.

e. Repeat the full cycle 12 to 15 times a minute at a steady, uniform rate of compression and expansion – a complete respiration every four or five seconds.

3. An operator will become tired when using this method for long periods. It may be necessary to relieve him.

a. Changing operators must be done without altering the rhythm of respiration.

b. There are several ways to change operators. Here is one that works very well:

After discussing the Holger-Nielsen Method, break the class into teams of three. Have each member of the team practice getting into position and administering artificial respiration to another member.

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Instructor's Notes

Visual No. 9

"Changing Operators"

Demonstrate the method of changing operators for the class, taking the relief operator's role.

When you are certain the students understand the technique, have the teams practice changing operators with each member acting as relief operator at least once.

Suggested Comments and Order of Presentation

[Use visual here.]

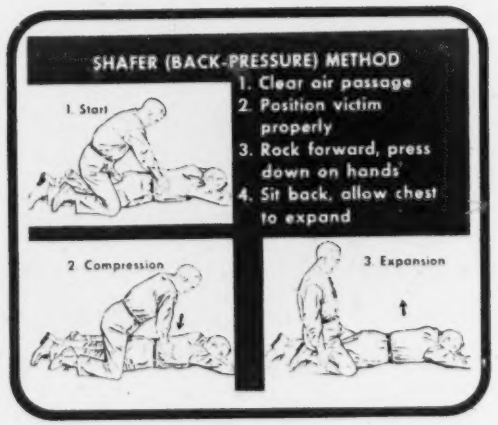
(1) The relief operator kneels on one knee beside the victim facing the operator.

(2) He swings sideways in unison with the operator, picking up the rhythm of the stroke. This should be done for three or four cycles.

(3) At a prearranged signal at the end of a cycle (as the victim's arms are lowered to the floor) the operator swings to one side out of the way.

(4) The relief operator, resting on one knee, swings into place with his hands in the proper position on the victim's back.

Instructor's Notes



Visual No. 10

"Shafer Method"

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When you feel the students understand the procedures, reassemble the teams and have them practice getting into position and administering artificial respiration by the Shafer method.

Suggested Comments and Order of Presentation

E. *The Shafer (prone-pressure) method* relies on the same kind of pressures to force air into and out of the lungs.

[Use visual here.]

1. The position of the operator and victim are, once again, important to the proper administration of this method.

   a. Lay the victim face down, one arm extended directly over his head, the other bent at the elbow.

   b. Turn his head toward the extended arm, so the side of his head is lying on the hand or forearm of the bent arm.

      (1) His nose and mouth will then be free for breathing.

   c. Kneel, straddling the victim's thigh or thighs, in a position that will allow you to place the palms of your hands on the small of the victim's back.

      (1) The fingers should rest on the ribs, the little finger just touching the lowest floating rib, the thumb and fingers in a natural position, with the tips of the fingers just out of sight on the sides of the trunk.

2. When you are in position, you are ready to begin artificial respiration.

   a. With your arms held straight, swing forward slowly, gradually placing your weight over your hands and upon the victim's back.

      (1) Your shoulders should be directly over the heel of your hand at the end of the forward swing.

Instructor's Notes

Suggested Comments and Order of Presentation

b. Now swing backward immediately, removing the pressure completely. Wait about two seconds, then swing forward again.

c. Repeat this double movement – compression and release – 12 to 15 times a minute.

3. Changing operators when using this method of artificial respiration requires coordination and practice.

a. The relief operator kneels beside the victim and swings forward and backward in unison with the operator.

b. At a prearranged backward or decompression stroke, the operator swings off the victim to the side opposite the relief operator.

c. At the same time, the relief operator swings into position straddling the victim's thigh or thighs to make the next compression stroke.

F. *The Silvester method* of artificial respiration makes use of the muscles used in regular respiration to force air into and out of the lungs.

[Use visual here.]

1. Position is important, again, to the proper administration of artificial respiration.

a. Place the victim on his back and remove any foreign matter from his mouth.

b. Since the victim is lying on his back, there is danger the tongue will fall back and block the windpipe. To avoid this, grasp the tongue and pull it forward.

Visual No. 11

"Silvester Method"

Instructor's Notes

Suggested Comments and Order of Presentation

(1) During artificial respiration, have someone hold the tongue forward, or hold it with a bandage.

c. Place a rolled-up coat or pad under the victim's shoulders. This will tilt the head back and straighten his windpipe.

d. Kneel just above the patient's head.

2. Artificial respiration should be started immediately.

a. Grasp both of the victim's arms at the back of his wrists.

b. Draw the arms upward and outward gently and hold them as far as they will go above the victim's head. This motion opens and expands the chest to the greatest possible extent.

Demonstrate the Silvester Method for the class.

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Reassemble the teams and have them practice the method.

c. Bring the arms forward over the chest, bent at the elbows and forearms crossed. With moderately increasing pressure, press down to decrease the size of the chest.

d. Repeat this cycle – expansion and compression – 12 to 15 times per minute.

3. When done properly, this treatment is hard work for the operator. He should be relieved as soon as he grows tired. Changing operators should be done in a way that avoids any change in rhythm.

a. The relief operator kneels beside the operator and grasps the wrist nearest him, just below and partially overlapping the operator's hand.

b. He matches the operator's motion for three or four cycles until he has gained the rhythm of the stroke.

Instructor's Notes

Suggested Comments and Order of Presentation

c. At a prearranged signal, and at the end of the compression stroke, the operator withdraws his arms and swings to one side.

d. The relief operator, resting on one knee, swings into place with his hands properly holding the wrists of the victim.

THE DISCUSSION OF ARTIFICIAL RESPIRATION ENDS HERE. On the next few pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of the techniques presented in this portion of the course.

ARTIFICIAL RESPIRATION

The First Fundamental of First Aid

The following questions will help you evaluate the students' retention of the principles and techniques covered in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions; each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative answers given for each question. Only one of the alternatives is correct.

I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer it *true*. If you feel it is inaccurate, answer *false* and explain why you believe it is wrong.

Question	*Correct Answer*
1. Oxygen is essential to human life. If it is lacking in the body, death may result.	True
2. At the top of the throat there is a flap called the *trachea*.	False (Epiglottis)
3. The lungs contain a number of grape-like air cells where carbon dioxide is exchanged for oxygen during respiration.	True
4. Drawing air into the lungs is a process known as *exhalation*.	False (Inhalation)
5. Artificial respiration is the process of causing air to flow into and from the lungs when natural breathing has ceased, or when it is irregular or feeble.	True
6. Before giving artificial respiration, you should take time to move the victim and loosen his clothing	False (Time is critical. Begin artificial respiration at once!)
7. When giving mouth-to-mouth resuscitation, you should be able to see the chest rise with each breath.	True
8. Artificial respiration should be continued until a victim begins to breathe normally, or until he is pronounced dead by a physician, or until rigor mortis sets in.	True
9. In administering artificial respiration by the Shafer (prone-pressure) method, the victim's arms should be bent at the elbow.	False (One arm should be extended over the head.)
10. When positioning the victim for artificial respiration by the Silvester method, a rolled up coat or pad should be placed under his shoulders to keep the windpipe straight and open.	True

II. Completion Questions

Complete the following statements by adding the correct word.

Question	*Correct Answer*
1. Oxygen, which is essential to human life, is contained in the air we breathe. It is taken into the lungs during respiration and distributed throughout the body in the _____.	Blood
2. In the lungs, _____ and other waste products of the body are exchanged for oxygen.	Carbon dioxide
3. We breathe automatically, taking in fresh, oxygen-enriched air and expelling used air with every respiration. In a person at rest, this cycle is repeated _____ per minute.	12 to 15 times
4. The administration of oxygen from a cylinder or tank is not a substitute for artificial respiration, but a _____.	Supplement
5. To prevent air leakage when giving artificial respiration by mouth-to-mouth resuscitation, you should pinch the _____.	Nostrils
6. During artificial respiration, the epiglottis (flap at the top of the windpipe) must be _____.	Open
7. When using the Holger-Nielsen method of artificial respiration, the operator kneels at the victim's _____.	Head
8. When a victim is unconscious, has a weak pulse, has stopped breathing and has burns on his body, there is a good chance he is suffering from _____.	Electric shock
9. When a victim is unconscious, has a weak and rapid pulse, a bluish or darkened color to his lips and earlobes and has stopped breathing, he may be suffering from _____.	Suffocation or asphyxiation
10. The method of artificial respiration which has the advantage of providing enough pressure to inflate the victim's lungs immediately is _____.	Mouth-to-mouth resuscitation

III. Multiple Choice

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three alternative answers and select the one you believe is most accurate.

Question *Correct Answer*

1. Artificial respiration can be defined as . . .
   a. The process of causing air to flow into and from the lungs when natural breathing has ceased.
   b. The administration of oxygen under pressure.
   c. The process of getting oxygen into the blood.

   Answer: a.

2. The most important factor in giving artificial respiration is . . .
   a. The method used.
   b. Positioning the victim properly.
   c. Time.

   Answer: c.

3. If a person has stopped breathing as a result of contact with an electric wire or appliance, the *first* thing you should do is . . .
   a. Give artificial respiration.
   b. Loosen his clothing at the neck and waist.
   c. Check to see if he is still in contact with the electrical current.

   Answer: c

4. When given mouth-to-mouth resuscitation, the *first* thing the operator should do is . . .
   a. Remove all objects from the victim's mouth.
   b. Pinch the nostrils closed.
   c. Take a deep breath.

   Answer: a.

5. When using the Holger-Nielsen method of artificial respiration, the victim should be placed . . .
   a. Face down.
   b. On his back, chin extended.
   c. On his side.

   Answer: a.

Question *Correct Answer*

6. When administering artificial respiration by the Shafer method, the operator kneels . . .
   a. At the victim's head.
   b. At the side of the victim.
   c. Over the thigh or thighs of the victim. Answer: c.

7. The method of artificial respiration considered most efficient is . . .
   a. The Holger-Nielsen (back-pressure, arm-lift) method.
   b. Mouth-to-mouth resuscitation.
   c. The Shafer (prone-pressure) method. Answer: b.

8. When using compressed oxygen to supplement artificial respiration, it is important to open the valve slowly with the oxygen flow . . .
   a. Directed away from yourself and the victim.
   b. Directed into a cap or handkerchief.
   c. Where there is a fire extinguisher. Answer: a.

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9. When changing operators during the administration of artificial respiration, the most important factor is . . .
   a. Not allowing the first operator to become too tired.
   b. Moving quickly while changing position.
   c. To maintain the rhythm of respiration. Answer: c.

10. When a victim has been revived and is breathing normally, he should be . . .
    a. Kept warm and quiet (lying down) to avoid strain on his heart.
    b. Moved immediately.
    c. Given oxygen. Answer: a.

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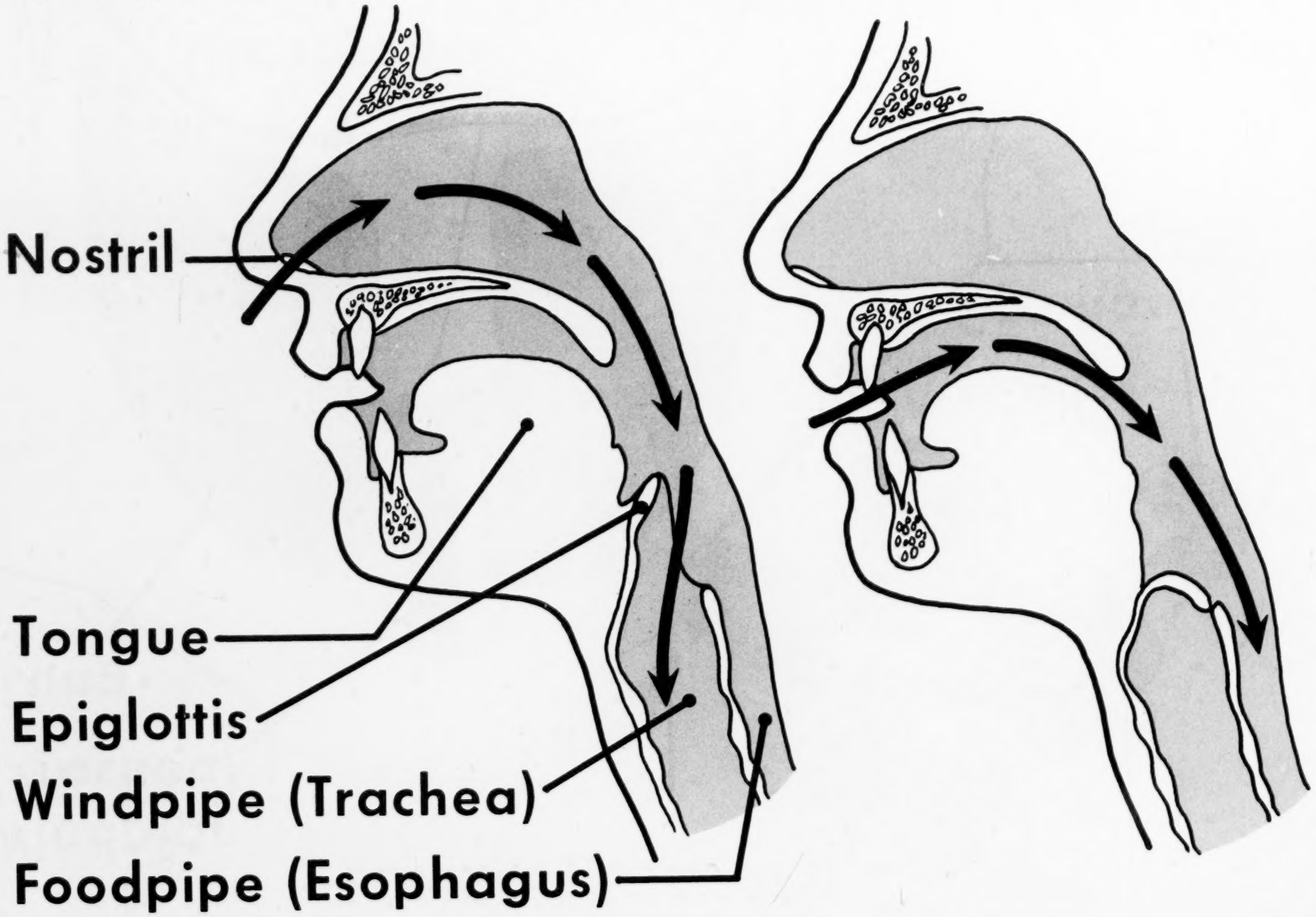
NOSE, THROAT AND WINDPIPE (TRACHEA)



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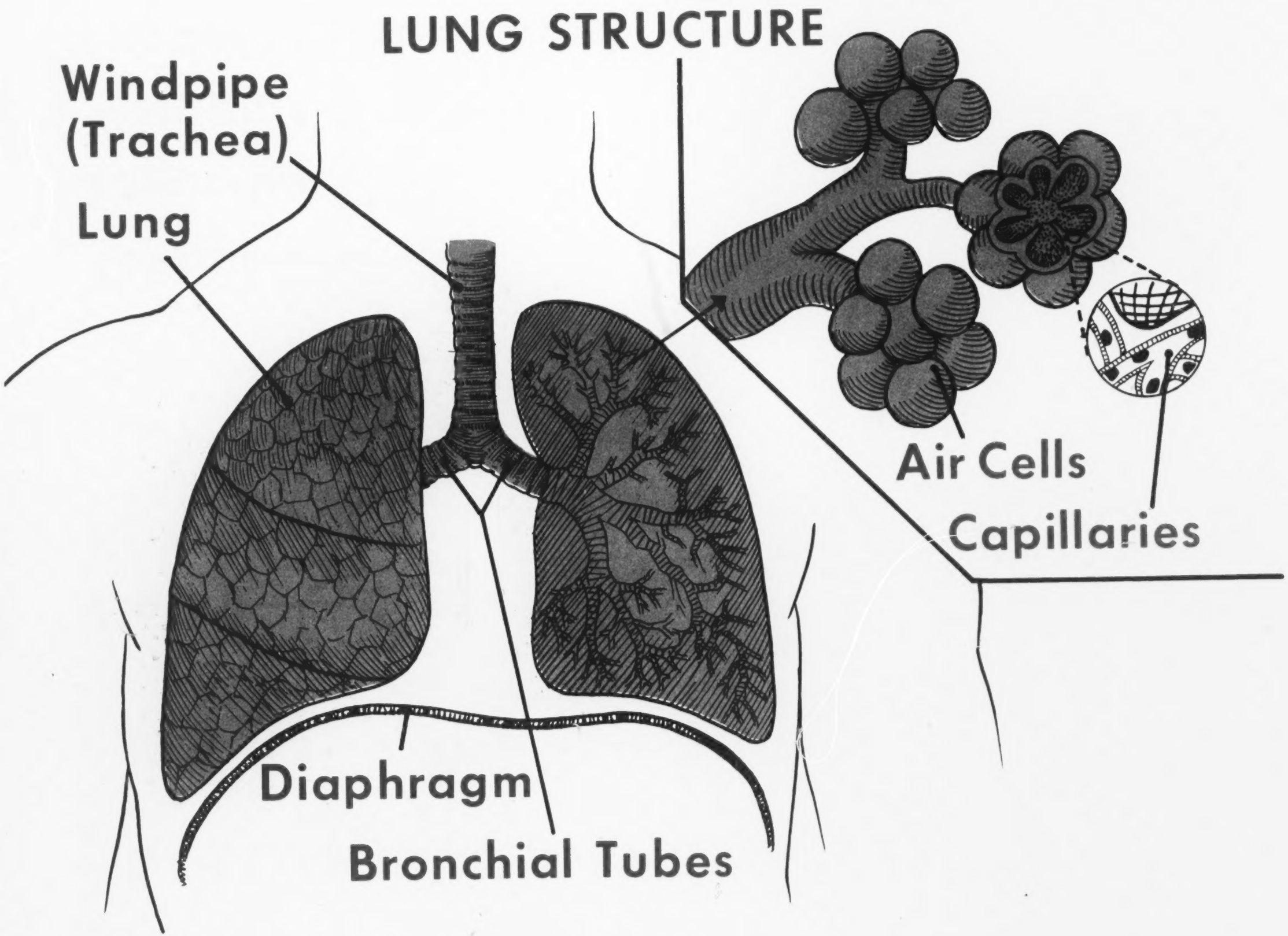
LUNG STRUCTURE



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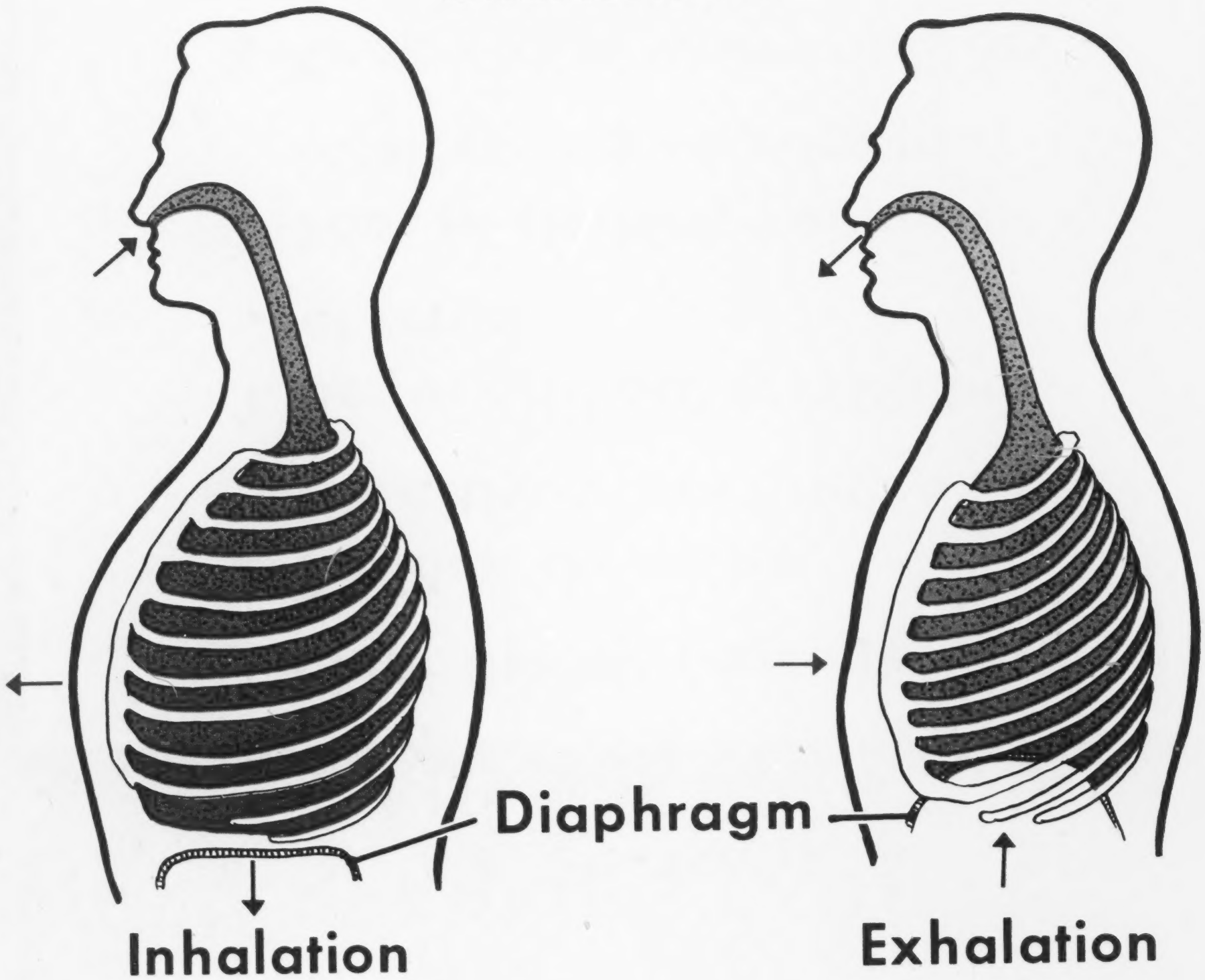
BREATHING

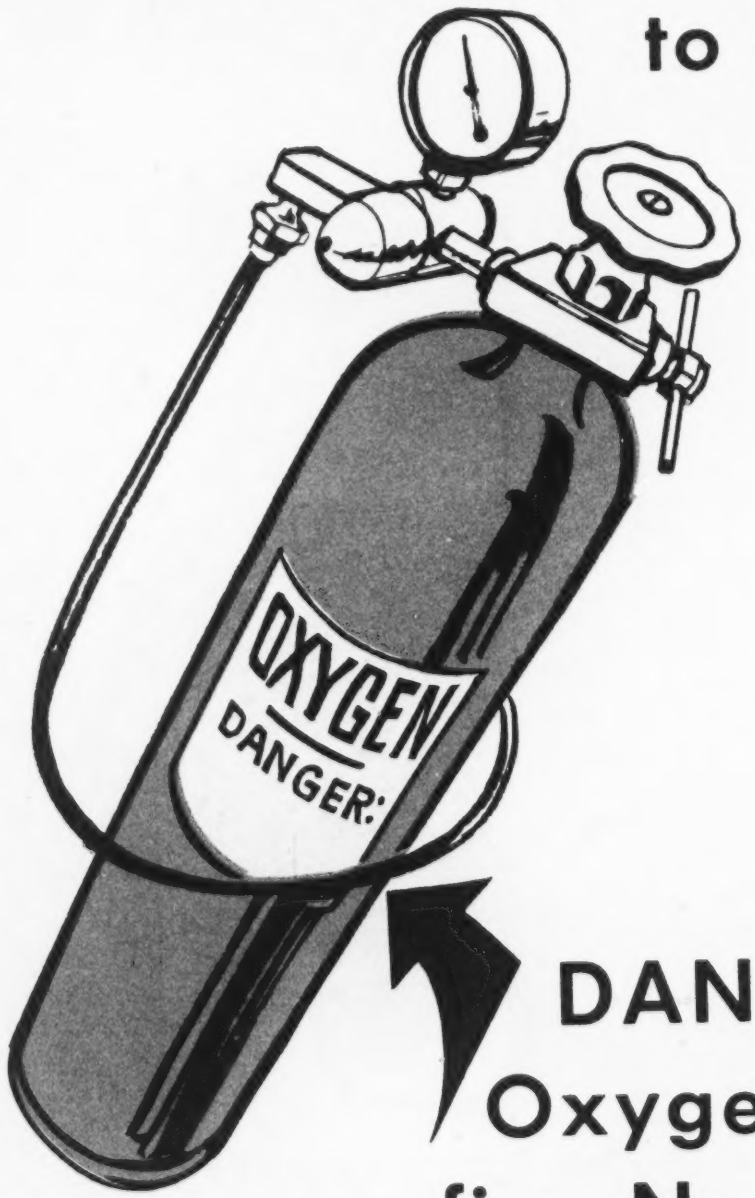


WHEN BREATHING STOPS—

EVERY SECOND COUNTS!

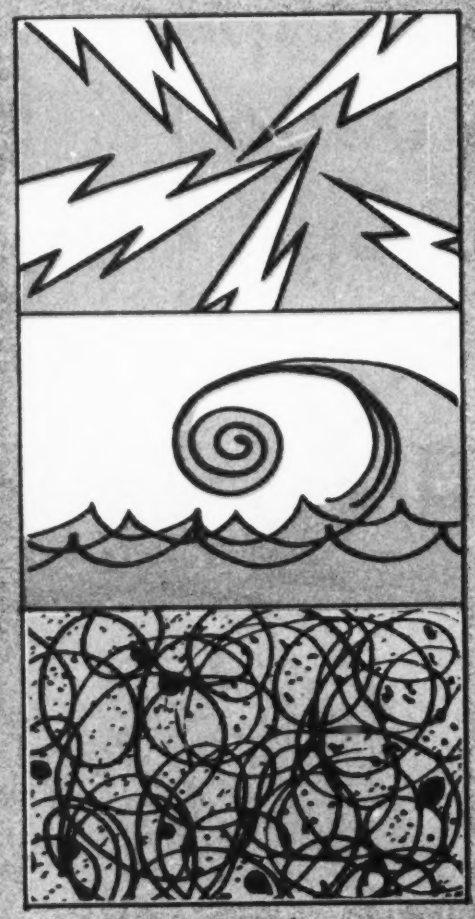
1. Clear the air passage
2. Position the victim for artificial respiration
3. Begin artificial respiration at once!
4. Loosen clothing (without interrupting respirations)
5. Keep victim warm and dry

OXYGEN: A supplement to artificial respiration



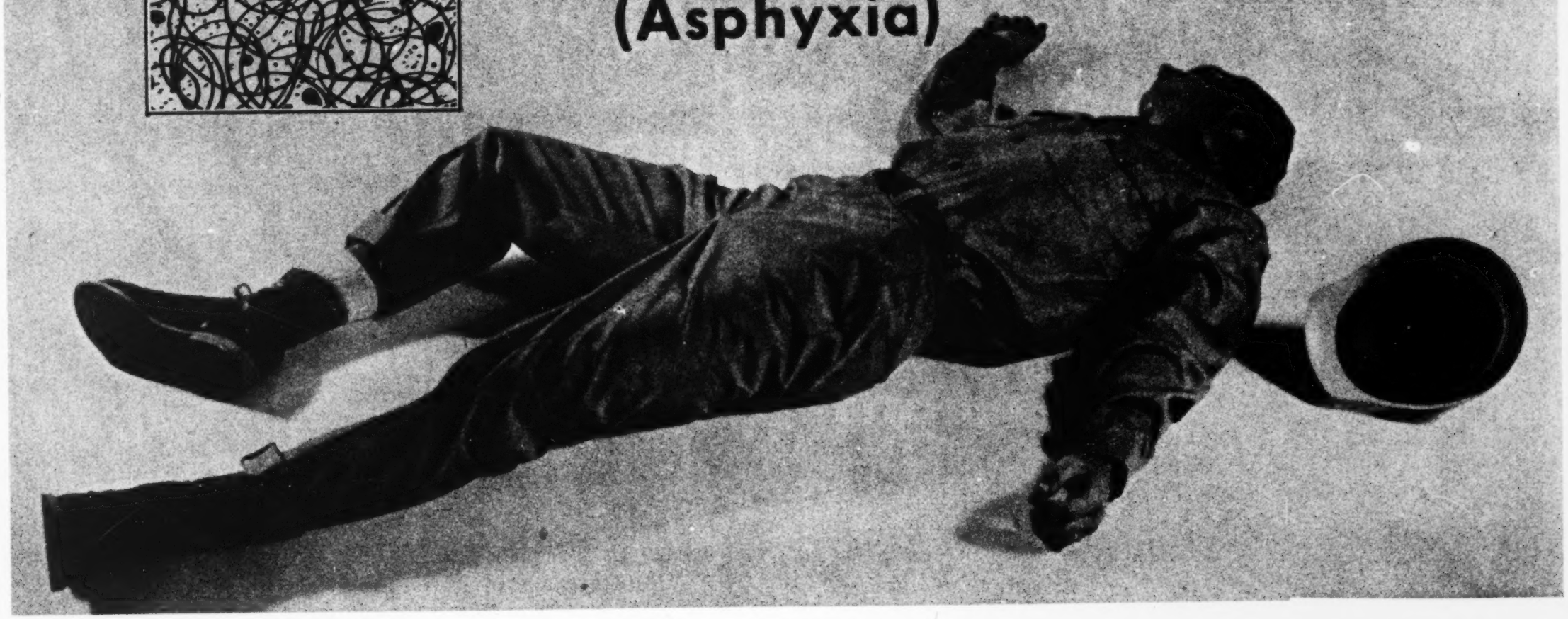
1. Adjust flow carefully
2. Direct moderate flow past victim's nose

DANGER:
Oxygen supports fire. No smoking or open flame in the area where oxygen is being used.



THE CAUSES

- Electric Shock
- Drowning
- Suffocation
- Poisonous Gases (Asphyxia)



MOUTH-TO-MOUTH RESUSCITATION

1.
Clear the air passage.

2. Lift up under neck (extend chin) and pinch the nostrils together.

3.
Inhale deeply. Breathe into victim's mouth.

4.
Remove mouth, listen for return flow of air.

HOLGER-NIELSEN (BACK-PRESSURE ARM-LIFT) METHOD

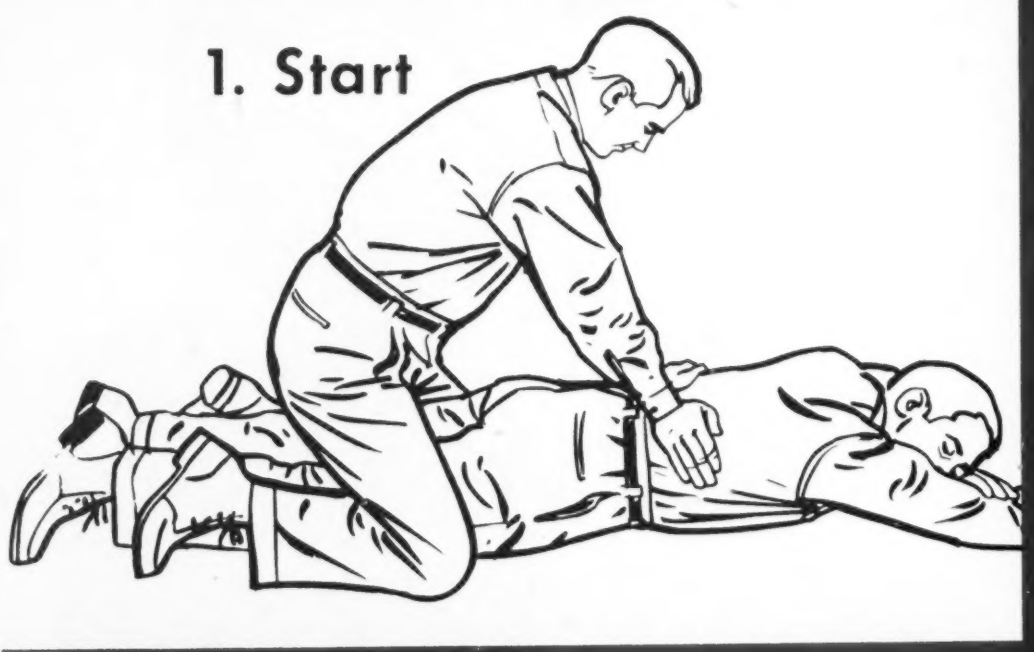
1. Clear air passage
2. Position victim properly
3. Rock forward, press down on the back
4. Rock backward slowly, relieving pressure
5. Pull victim's elbows up and toward you

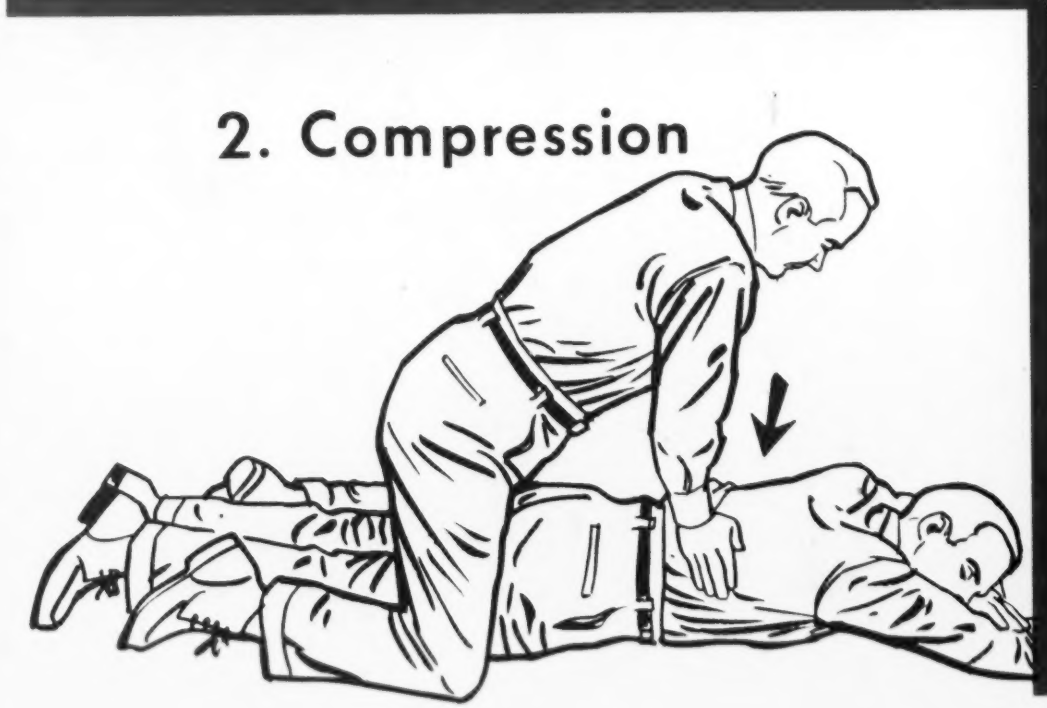
CHANGING OPERATORS
(Holger-Nielsen Method)

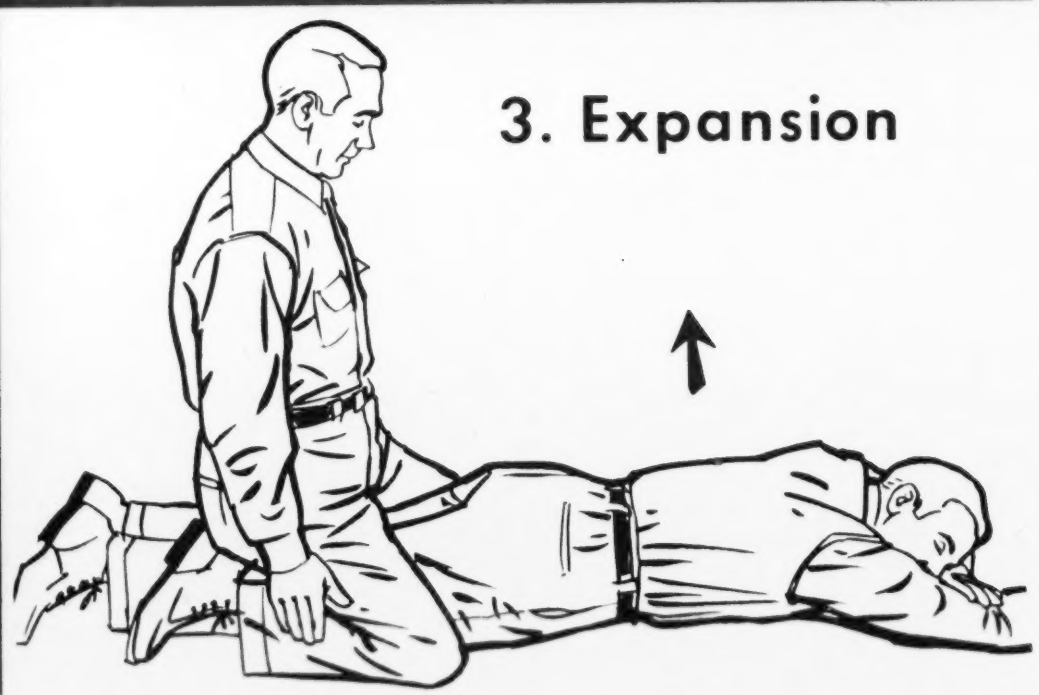
1. **Kneel beside the operator**
2. **Match rhythm of operator**
3. **Wait until end of a complete cycle**
4. **Swing into place, continue operations at same rate**

SHAFER (BACK-PRESSURE) METHOD

1. Clear air passage
2. Position victim properly
3. Rock forward, press down on hands
4. Sit back, allow chest to expand







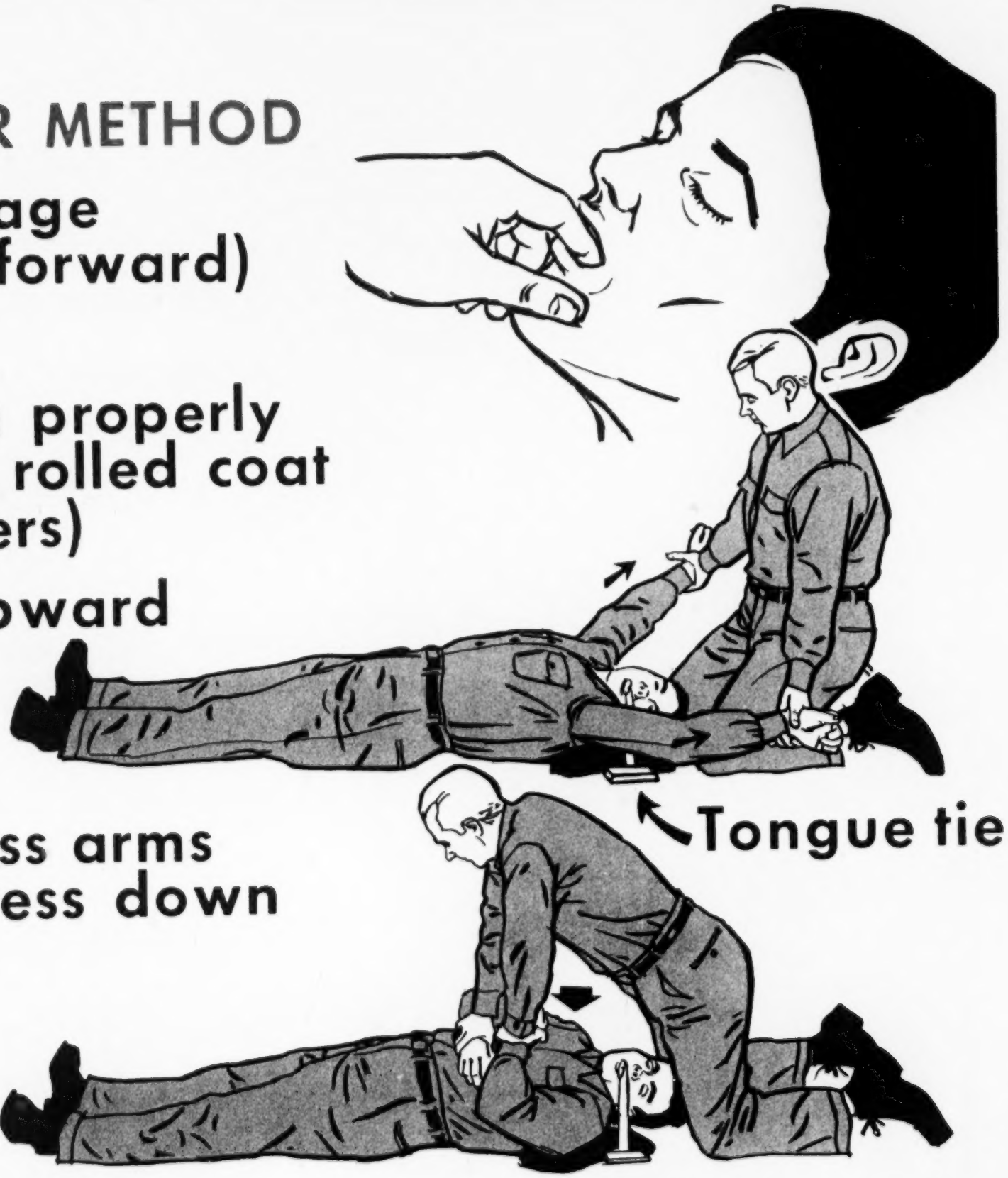
SILVESTER METHOD

1. Clear air passage
   (Hold tongue forward)

2. Position victim properly
   (Place pad or rolled coat
   under shoulders)

3. Draw arms upward
   and outward

4. Bend and cross arms
   over chest, press down



Control of Bleeding

SECOND FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: One Hour

CONTROL OF BLEEDING

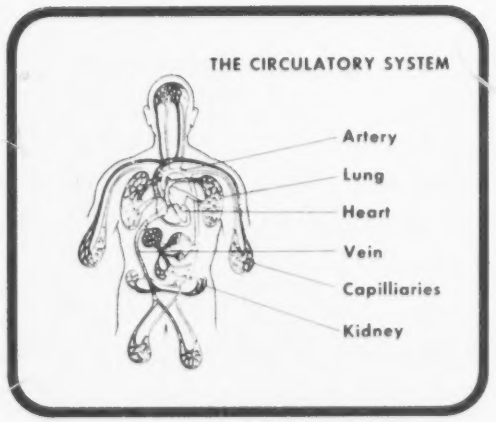
The Second Fundamental of First Aid

The loss of two pints of blood by an adult is a serious matter; the loss of three pints can cause death. At certain points in the body, fatal hemorrhages (bleeding) may occur in one to three minutes after an accident. This is true, for instance, when the two principal arteries of the neck have been severed . . . or the principal arteries of the arm or thigh. A rupture or cut of the main trunk of arteries of the chest and abdomen can cause death in less than 30 seconds!

It's important, then, to understand the steps used to control bleeding in an emergency. The proper action, administered quickly at the scene of an accident, can save a life.

This unit explains what to do for an accident victim until help arrives. It illustrates effective techniques for the control of bleeding, explains the body's circulatory system, and suggests ways to care for the victim until medical help comes. In the following outline, the important topics have been listed for the instructor at the right . . . in a logical order of presentation. On the left, supporting visuals, demonstrations and student exercises have been given. If the instructor follows these guidelines during his presentation, he will have very little trouble getting the principles and techniques used in First Aid across to his students.

Instructor's Notes



Visual No. 12

"Systemic Circulation"

Place the transparency on the projector and turn on the lamp as you begin your discussion of the Circulatory System. Point out the heart and lungs as they are introduced in the outline.*

*When pointing out elements in a visual, lay the tip of a pencil or pen on the surface of the transparency. The silhouette will show on the screen and direct attention to the area you've been discussing.

Suggested Comments and Order of Presentation

I. The Circulatory System

A. In order to understand why certain steps are effective in the control of bleeding, you should know something about the system through which blood circulates . . . and functions of blood in the body.

B. In order to live, a person's body must receive a constant supply of nourishment . . . oxygen, heat, etc., which is distributed in the blood.

1. If the supply of blood is cut off for any period of time, the tissues in the body will simply die for want of nourishment.

[Use visual here.]

C. The blood is moved through the circulatory system by the pumping action of the heart, a hollow muscular organ in the chest. The heart is the center and power for the system.

1. It's action keeps the blood flowing steadily under pressure to the most remote tissues in the body.

2. In a healthy person, the heart contracts (beats) about 72 times a minute.

3. These contractions or heart beats cause the blood to pulse through the body. The pulse is used to measure the heart beat and can be taken at the wrist or neck.

4. Each contraction pulls in blood, forces it into the lungs where it collects oxygen, then pumps it out again to the rest of the body.

5. The blood makes a complete cycle in 1 minute, 15 seconds (75 seconds).

D. Blood is circulated through the body in a series of large and small blood vessels . . . arteries, capillaries and veins – which form a "closed" circular system.

Instructor's Notes	Suggested Comments and Order of Presentation
Point out arteries on Visual No. 12.	1. Blood leaves the heart through a large artery called the *Aorta*.
	2. It is distributed through several branch *arteries* reaching all parts of the body.
Point out capillaries on Visual No. 12.	3. As the arterial vessels narrow and spread into thread-like vessels known as *capillaries*, the passage of blood slows down.
	4. The slow passage of blood through the capillaries allows the exchange of oxygen for carbon dioxide and waste products in the tissues of the body.
Point out veins on Visual No. 12.	5. After collecting these waste products, the blood returns to the heart through a network of blood vessels called *veins*.
Trace the flow of blood through the kidneys to the heart and lungs. Again, use a pointer on the surface of the transparency as you discuss each point.	6. The veins transport the blood through the kidneys which act as a kind of "purifying plant" for the body. Waste products are removed from the blood here. Only carbon dioxide remains.
	7. Carbon dioxide is removed from the blood after it has been returned to the heart and pumped into the lungs. And the cycle begins all over again.

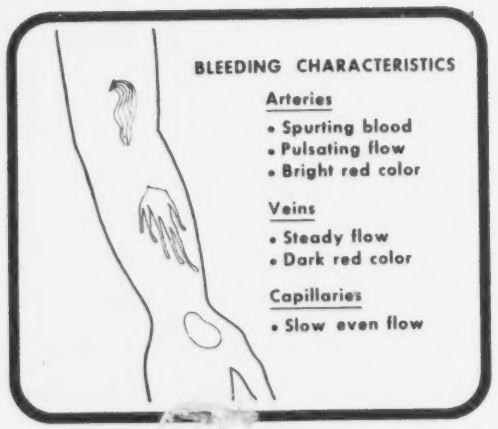
E. Clotting (or Coagulation)

1. When there is a cut or break in the circulatory system, the blood thickens at the wound and forms a kind of dam to halt bleeding. This is a natural chemical response known as *clotting*.

2. The first purpose of first aid treatment is to help the blood form clots at the site of a wound. There are several direct steps you can take, all intended to reduce the flow of blood at the wound.

   a. Apply pressure directly to the wound.

Instructor's Notes



Visual No. 13
"Bleeding Characteristics"

Use a *revelation shield* to present this visual. With a piece of paper or cardboard, cover the headings not yet discussed. Then, as each new subject is introduced, slide this "shield" down on the transparency, exposing the appropriate information. This will keep your students with you and discourage them from reading ahead while you're discussing an earlier topic.

Suggested Comments and Order of Presentation

b. Position the victim in a way to decrease the force of blood flowing to the wound.

c. Limit the victim's movements. Too much movement will increase the action of the heart, causing the blood to flow faster.

3. In some people, clots will not form by themselves. These people are known as "bleeders" and they are in danger of fatal loss of blood from even the smallest wound. *They must be taken to a medical facility immediately.*

F. Hemorrhage or Bleeding

1. Not all wounds are alike. A cut artery, for instance, is a good deal more serious than an opening in the flesh where only capillaries are involved. In administering First Aid, it is important to recognize the differences.

[Use visual here.]

a. Bleeding from an Artery

(1) When blood spurts from a wound and is bright red, an artery has been cut. The flow from an artery comes directly from the heart and will pulsate with the heart's contractions. The oxygen in the blood gives it a bright red color.

(2) Blood from an artery will not clot easily; the flow is fast and strong.

(3) To help the blood clot, you must slow the flow of blood either by applying pressure directly to the wound, or by squeezing the artery shut temporarily at a point between the heart and the wound.

Instructor's Notes

Suggested Comments and Order of Presentation

b. Bleeding from a Vein

(1) When dark red blood flows from a wound in a steady stream, a vein has been cut. The carbon dioxide and other waste products in the blood give it a dark color.

(2) To slow the flow of blood and promote clotting, apply pressure directly to the wound. If bleeding continues, apply pressure to the vein at a point below the wound (on the side of the wound away from the heart) to shut off the flow of blood.

c. Bleeding from Capillaries

(1) When blood oozes slowing from a wound, capillaries have been cut.

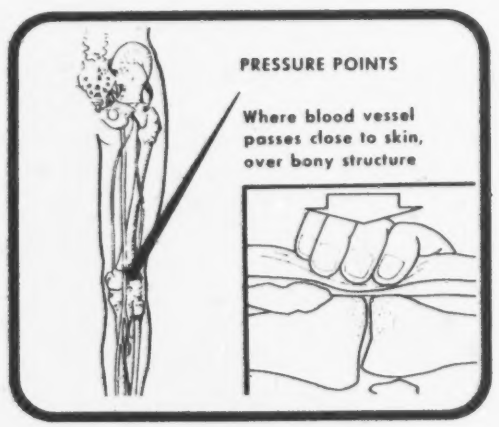
(2) There is little cause for alarm here since the amount of blood that can be lost is small.

(3) The application of sterile pad or bandage to the wound will normally stop the bleeding completely and allow the blood to clot.

Instructor's Notes

Visual No. 14

"Apply pressure directly to the wound."



Visual No. 15
"Principles of Pressure Points"

Suggested Comments and Order of Presentation

II. Methods of Controlling Bleeding

A. Direct pressure.

[Use visual here.]

1. When an accident occurs, don't waste time . . . apply pressure directly over the wound!
2. Place a sterile pad, clean handkerchief, cloth or bandage over the wound and press firmly with your hand . . . or both hands.
3. This pressure will slow the flow of blood and promote clotting.

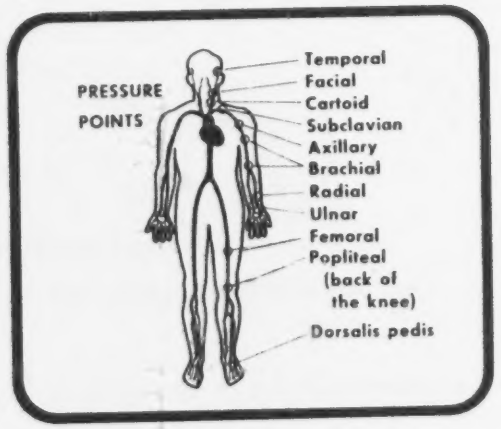
B. Indirect pressure.

1. When bleeding is severe, pressure on the wound may not be enough to halt bleeding. In this case, additional pressure on the affected blood vessel is the best technique.
   a. Blood vessels are much like soft rubber tubing. They may be squeezed shut at specific points in the body to slow the flow of blood.
   b. There are 22 points in the body where pressure on the blood vessel can be used to control the flow of blood. They are known as "Pressure Points."

[Use visual here.]

   c. At a pressure point, the blood vessel passes close to the surface of the skin over a bony structure. To reduce the flow of blood through the vessel, you apply pressure with the fingers or a firm, padded object, squeezing the vessel against the bone.

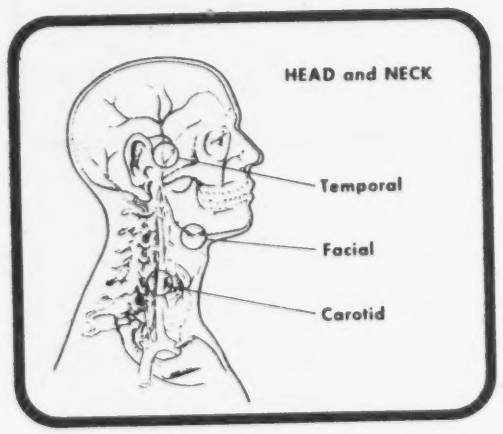
Instructor's Notes



Visual No. 16

"Pressure Points in the Body"

Point out the major pressure points listed in the visual.



Visual No. 17

"Pressure Points at the Head and Neck"

Suggested Comments and Order of Presentation

d. To control bleeding from an artery, a pressure point is selected *between the heart and the wound*. Normally this will be a point above the wound.

e. When bleeding is from a vein, pressure is applied at a point *below* the wound, on the side of the wound away from the heart.

[Use visual here.]

2. Pressure points. There are 11 pressure points on each side of the body. They have been listed on Visual No. 16.

a. Bleeding from wounds on the head is controlled by using the pressure points shown on Visual No. 17.

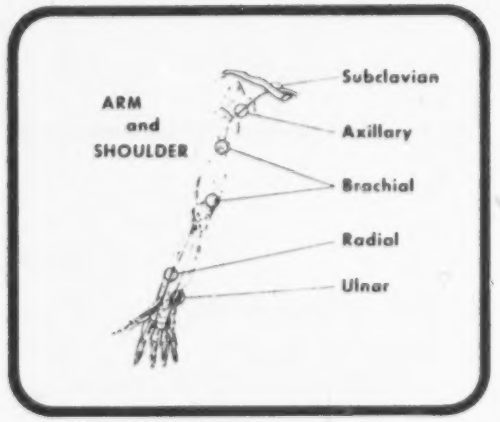
[Use visual here.]

(1) The *Temporal* pressure point is used to control arterial bleeding from a scalp or head wound. It is important that this point be used for brief periods only; it can cut off blood to the brain and cause damage if held over a period of time.

(2) The *Facial* pressure point will help slow the flow of blood from a cut in the face. Again, it should be used only for a minute or two. The

Instructor's Notes

Demonstrate digital pressure at pressure points of the head and face. Have the students find these points on their own bodies.



Visual No. 18

"Pressure Points at the Arm and Hand"

Have the students locate the four pressure points on their arm.

Suggested Comments and Order of Presentation

pressure point is located in the "notch" along the lower edge of the bony structure of the jaw.

(3) The *Carotid* pressure point will control major bleeding of the artery as it passes through the neck. It is the principal source of blood to the brain. It should not be used for more than a minute or two.

b. Wound on the arm or hand call for the use of pressure points shown on Visual No. 18.

[Use visual here.]

(1) The *Ulnar* pressure points at the wrist may be used to control bleeding from a wound on the hand. There are two, both must be used at the same time!

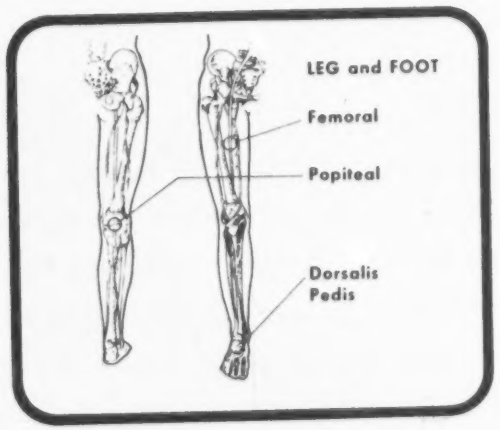
(2) *Radial* pressure points, names for the bones in the forearm, may be used for wounds at the wrist or hand.

(3) One of the most effective pressure points for cuts on the lower arm is the *Brachial* point at the elbow. This is where the artery is very close to the surface as it passes over the large elbow joint.

(4) For wounds just above the elbow, the *Axillary* pressure point is effective. Here, the artery just under the upper arm is pressed against the bone from underneath.

(5) The *Subclavian* pressure point is located deep behind the collar bone in the "sink" of the shoulder. To reach it, you must push your thumb through the thick layer of muscle at the top of the shoulder and press

Instructor's Notes



Visual No. 19
"Pressure Points at the Leg and Foot"

At the end of the discussion of pressure points, pair off the students and have them apply digital pressure to any of the eleven pressure points on their partners. The most accessible points on the body for this exercise are:

1) Temporal
2) Brachial
3) Radial
4) Doralis Pedis

Suggested Comments and Order of Presentation

the artery against the collar bone. It should be used only in extreme cases . . . such as amputation of the arm.

c. Wounds on the leg, including those resulting in compound fractures, are controlled from the points shown in Visual No. 19.

[Use visual here.]

(1) The *Popliteal* pressure point at the back of the knee is the most effective point for controlling bleeding from a wound on the leg. The artery passes close to the surface of the skin, over the large bones in the joint.

(2) For major wounds, including the amputation of the leg, the *Femoral* pressure point is used. Here, the artery passes inside the upper thigh. The pressure point is located four to five inches (about one handspan) from the groin. Temporary control may be achieved by pressing the artery against the bone with your thumb.

(3) The *Dorsalis Pedis* pressure point controls the bleeding in the lower foot and toes. It is found on the top of the foot.

C. Positioning of the victim.

1. Lay the victim flat.

2. Raise the wounded part of the body higher than the rest of the body *unless bones are broken*.

a. Avoid positioning the body this way if there is an injury to the head, or if the victim is suffering from apoplexy or sunstroke.

Instructor's Notes

Suggested Comments and Order of Presentation

D. Application of cold appliances (cold packs, ice bags, cold cloths) to the area of the wound.

1. Cold narrows blood vessels and will aid in the formation of a clot.
2. Cold should be applied to the *area* of the wound, but not directly over the wound.
3. A cloth should be place between the cold appliance and the skin.

E. Application of a tourniquet.

1. *A tourniquet should be used only when the bleeding is so severe that the victim's life is endangered, and when other methods of control are ineffective.*
   a. A tourniquet can clamp off the entire blood supply to certain parts of the body and cause extensive damage to the skin and underlying tissue.
2. Techniques for applying a tourniquet.
   a. To apply a tourniquet, use a strong, wide piece of cloth. *Never use wire, rope, twine or any narrow material which might bruise or cut the flesh.*
   b. Select a solid, padded object (piece of stick, stone, coal, etc.) to place over the appropriate pressure point.
   c. Wrap the arm or leg with a solid, padded object next to the arterial pressure point. Tie a half knot on the outside of the arm or leg.
   d. Insert a strong stick over the half knot and tie it in place.
   e. Twist the stick to apply pressure until bleeding slows.

Display the equipment used in the application of a tourniquet.

If time permits, demonstrate the application of a tourniquet at the *axillary* pressure point in the upper arm of a student. Ask him how it feels. Explain that the loss of feeling in the lower arm is an indication that blood has been cut off by the tourniquet. For this reason, a tourniquet should not be left in place for more than 10 minutes at a time.

Instructor's Notes

Visual No. 20
"Tourniquet Application at the Armpit"

Visual No. 21
"Constricting Bandage"

Suggested Comments and Order of Presentation

f. If there is a delay in getting the victim to a doctor, loosen the tourniquet after 10 minutes.

g. If bleeding begins again (after loosening tourniquet), tighten it after a few seconds . . . as soon as color has returned to the skin under the tie.

h. When professional medical help arrives, tell the doctor when the tourniquet was applied and how long it has been in place.

[Use visual here.]

3. A deep wound high on the arm, or an amputation at the upper part of the arm, requires a specially-applied tourniquet at the armpit.

   a. Place the center of the cloth in the armpit over a well-padded object.

   b. Cross the ends of the cloth over a pad at the top of the shoulder and carry the ends around the back and chest – to the opposite armpit – and tie it over the pad.

   c. To tighten the tourniquet, insert a small stick or similar object under the cross in the bandage on the shoulder and twist until bleeding is controlled.

F. Constricting Bandages

[Use visual here.]

1. When direct pressure does not stop bleeding, a constricting bandage may be applied.

   a. A constricting bandage is placed over a pressure point, just as a tourniquet is applied.

Instructor's Notes

Suggested Comments and Order of Presentation

b. Unlike a tourniquet, however, pressure is applied with a square knot over the artery or vein at a point near the wound (not necessarily a pressure point). *It is not twisted.*

c. The same techniques of application and precautions used in tourniquet application should be followed with a constricting bandage.

III. Internal Bleeding

A. Internal bleeding is difficult to diagnose because there are seldom visible signs of bleeding on the body. Normally a victim will display the same symptoms associated with shock: a dull, chalk-like appearance of the skin; glazed, vacant or half-closed eyes; a taut, anxious expression.

B. If you suspect internal bleeding, take the following steps:

1. Lay the victim on a flat, level surface.
2. Apply cold cloths or ice to the area where you think there is internal bleeding.
3. Keep the victim warm until medical help arrives. Cover him with blankets, a coat or towels. If he is lying on a cold or damp surface, place a blanket or coat under him.
4. DO NOT give the victim a stimulant of any kind, including coffee or tea.
5. Summon medical help immediately!

THE DISCUSSION OF CONTROL OF BLEEDING ENDS HERE. On the next five pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of techniques presented in this portion of the course.

CONTROL OF BLEEDING

The Second Fundamental of First Aid

The following questions will help you evaluate the students' retention of the principles and techniques covered in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions; each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a one-word *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative responses; only one of which is correct.

I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer *true*. If you feel it is inaccurate, answer *false* and explain why you believe it is wrong.

Question	*Correct Answer*
1. If the supply of blood is cut off to a part of the body, the tissues will die from a lack of oxygen and nourishment.	True
2. In a healthy person, the heart beats about 110 times every minute.	False (72 beats per minute)
3. The veins transport the blood to the kidneys where waste products are removed.	True
4. To help a clot form at the wound, you move the wounded part of the body.	False (limit movement)
5. Spurting blood will not clot easily.	True
6. Direct pressure over the wound should be the *last* method of controlling bleeding.	False (first method)
7. The Femoral pressure point is used to control bleeding when an arm has been cut.	False (upper leg)
8. The application of cold aids the formation of clots by decreasing the size of the blood vessels.	True
9. Severe bleeding from a vein is controlled by placing a cons ting bandage *above* the wound (between the heart and the wound).	False (below the wound)
10. When internal bleeding is suspected, the victim should be laid on a flat, level surface	True

II. Completion Questions

Complete the following statements by adding the correct word.

Question	*Correct Answer*
1. The color of venous blood is _____.	Dark red
2. A "bleeder" is a person whose blood will not _____.	Clot or coagulate
3. Indirect pressure means applying pressure over _____.	A pressure point
4. The Radial pressure point is located at the _____.	Wrist
5. The application of cold to the region of the wound causes the blood vessels to _____.	Narrow or constrict
6. Bleeding can normally be stopped by applying pressure to the wound with a sterile bandage. This method is called applying _____ pressure.	Direct
7. For severe, life-threatening bleeding that cannot be controlled by other means, you can apply a _____.	Tourniquet
8. A tourniquet should be loosened every _____ minutes.	Ten
9. When a tourniquet is applied at the pressure point, a _____ should be placed next to the skin.	Padded object
10. The same techniques and precautions used in the application of a tourniquet should be followed when applying a _____.	Constricting bandage

III. Multiple-Choice Questions

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three possible answers and select the one you think is most accurate.

Question — *Correct Answer*

1. The loss of blood can cause death in a short time. The amount varies, but death can result from the loss of . . .
   a. Three pints of blood
   b. One pint of blood
   c. One-half pint of blood

   Answer: a.

2. Blood is moved through the body in a series of large and small blood vessels – arteries, veins and capillaries. How is the pressure supplied to circulate the blood?
   a. Movement of the body
   b. Body heat
   c. The contraction and expansion (pumping action) of the heart

   Answer: c.

3. The entire supply of blood in the body circulates through the body in an average time of . . .
   a. 45 seconds
   b. 75 seconds
   c. 90 seconds

   Answer: b.

4. Blood supplies oxygen to the tissues in the body. Where does it get it?
   a. From the air
   b. From the heart
   c. From the lungs

   Answer: c.

Question	*Correct Answer*
5. If blood spurts from the wound and is bright red in color, what kind of damage is indicated? a. A broken bone b. A cut or severed artery c. A cut vein	Answer: b.
6. A PRESSURE POINT is . . . a. Any point on the body above the wound b. A point where the blood vessel passes close to the surface of the skin over a bony structure c. A point at the center of the wound	Answer: b.
7. When an artery has been cut, use a pressure point . . . a. At a point between the heart and the wound b. Above the heart c. At a point on the side of the wound away from the heart	Answer: a.
8. The Temporal pressure point is used to control bleeding from . . . a. The hand b. The scalp c. The forearm	Answer: b.
9. Where is the Subclavian pressure point located? a. Inside the thigh, one handspan from the groin b. Back of the knee c. Under the collar bone	Answer: c.
10. Bleeding can normally be stopped by . . . a. Putting the victim's feet up b. Applying hot packs to the wound c. Applying pressure to the wound with a sterile pad or bandage	Answer: c.

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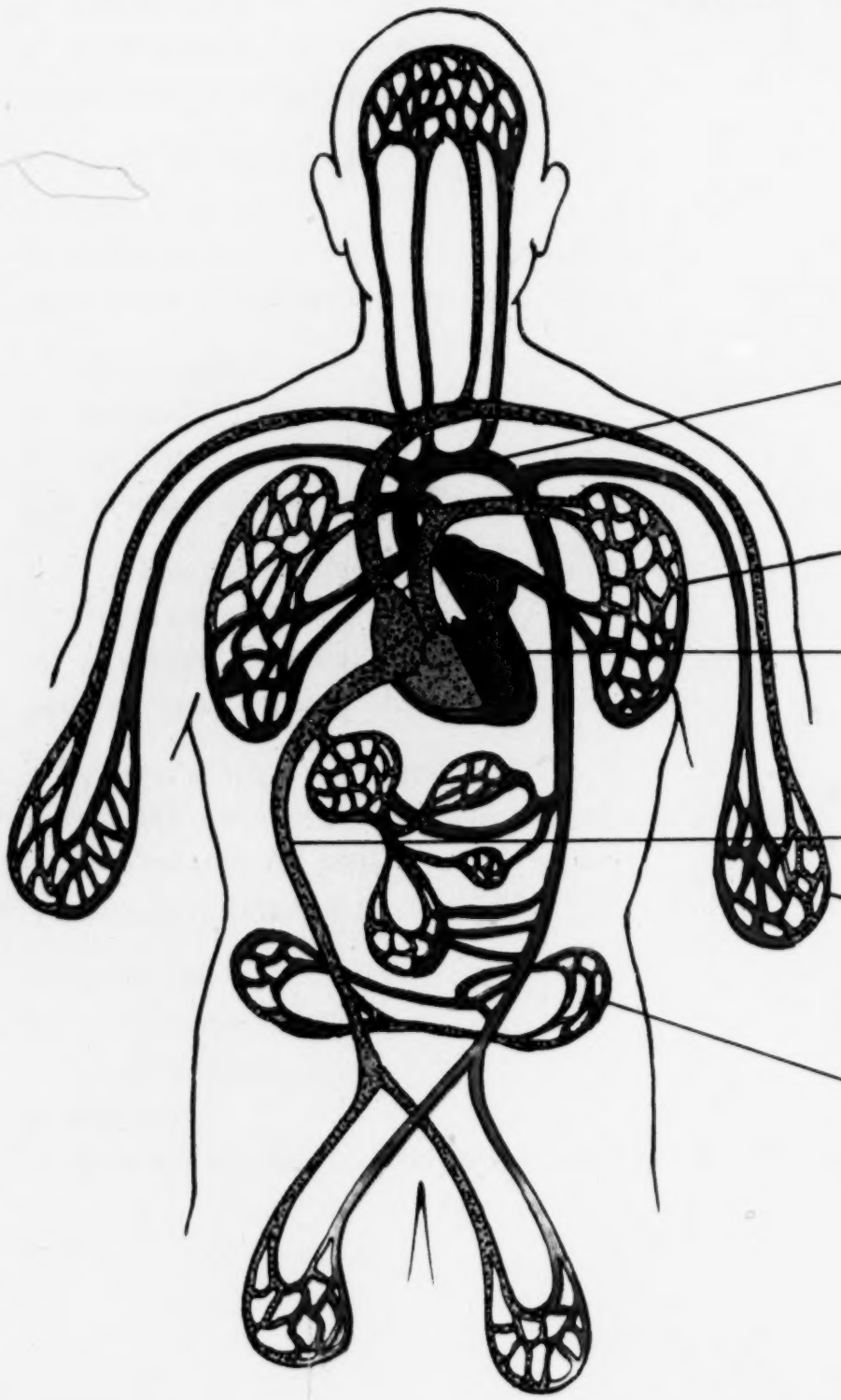
THE CIRCULATORY SYSTEM



BLEEDING CHARACTERISTICS

Arteries

- Spurting blood
- Pulsating flow
- Bright red color

Veins

- Steady flow
- Dark red color

Capillaries

- Slow even flow

Apply pressure directly to the wound

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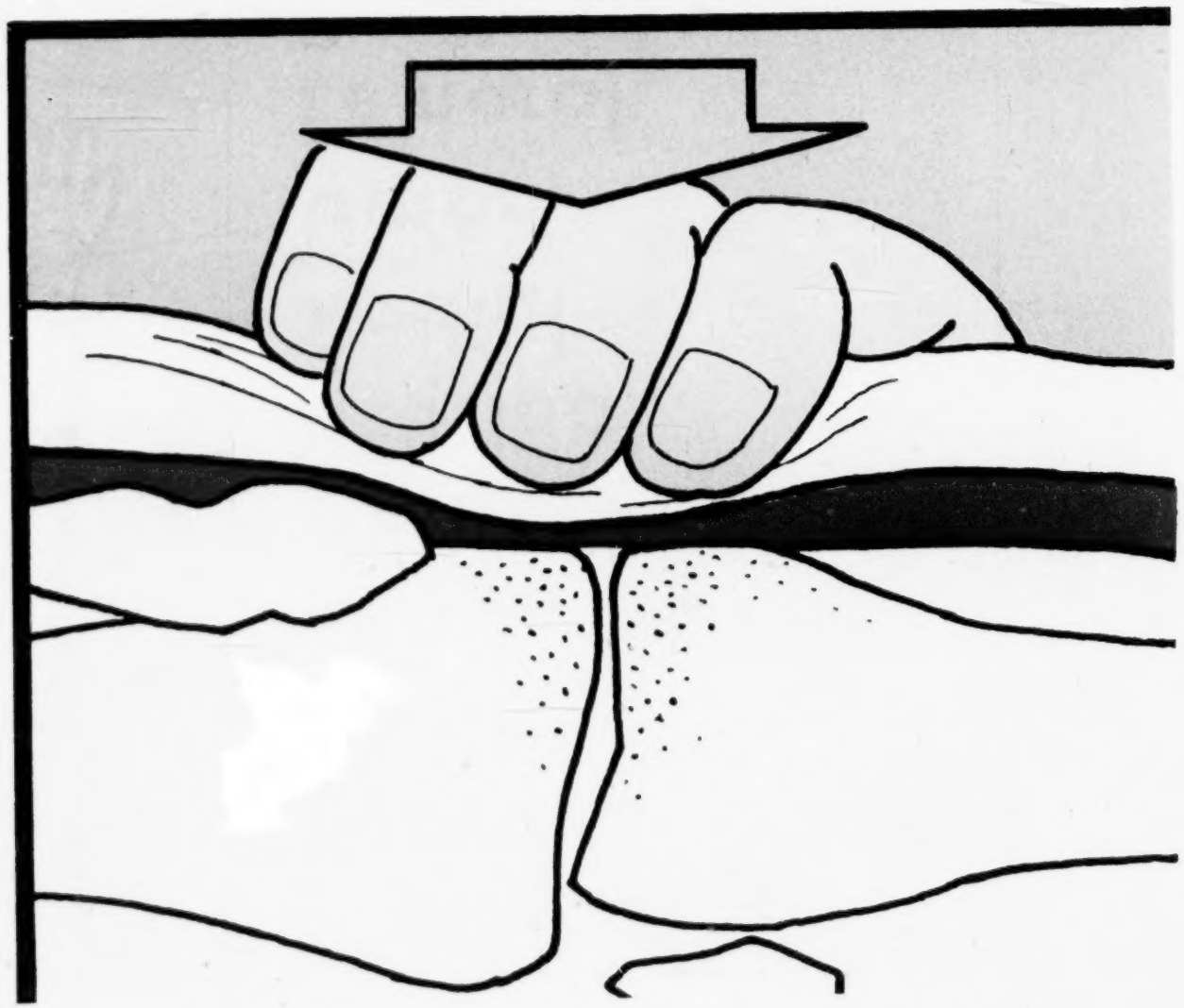
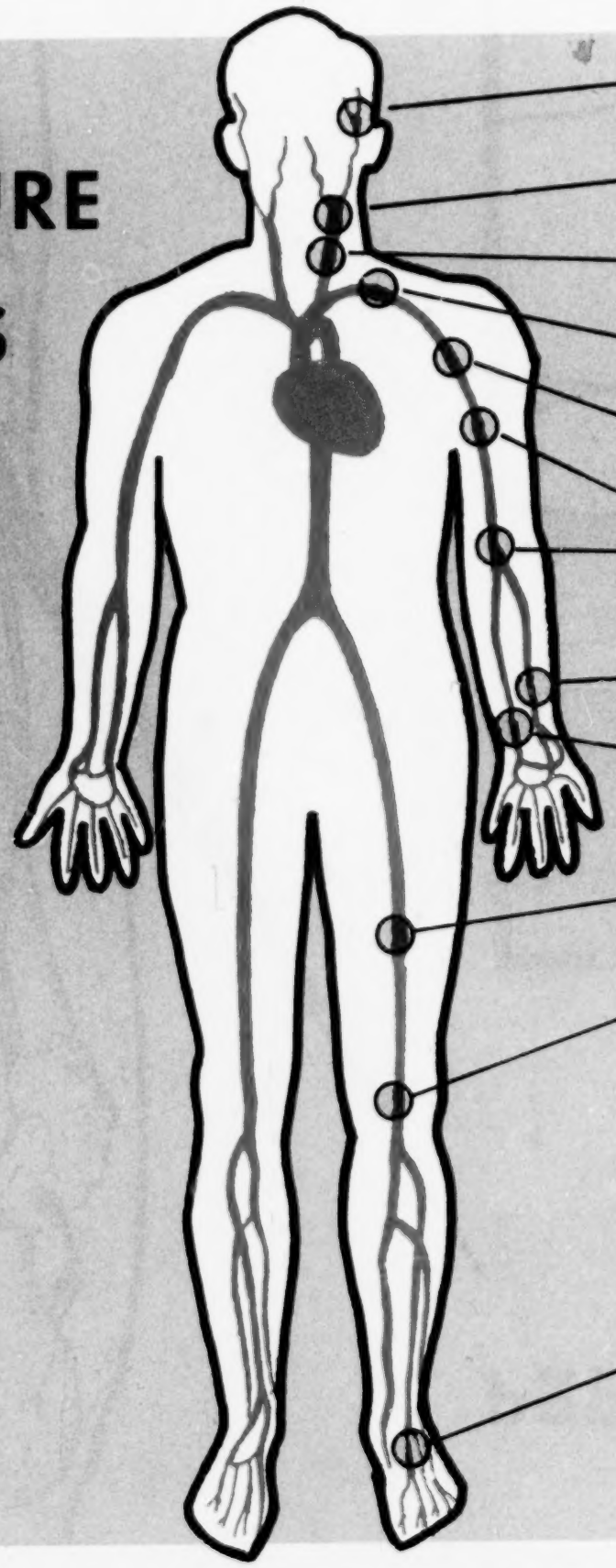
PRESSURE POINT

Where arteries pass close to skin, over bony structure



PRESSURE POINTS



- Temporal
- Facial
- Carotid
- Subclavian
- Axillary
- Brachial
- Radial
- Ulnar
- Femoral
- Topliteal (back of the knee)
- Dorsalis pedis

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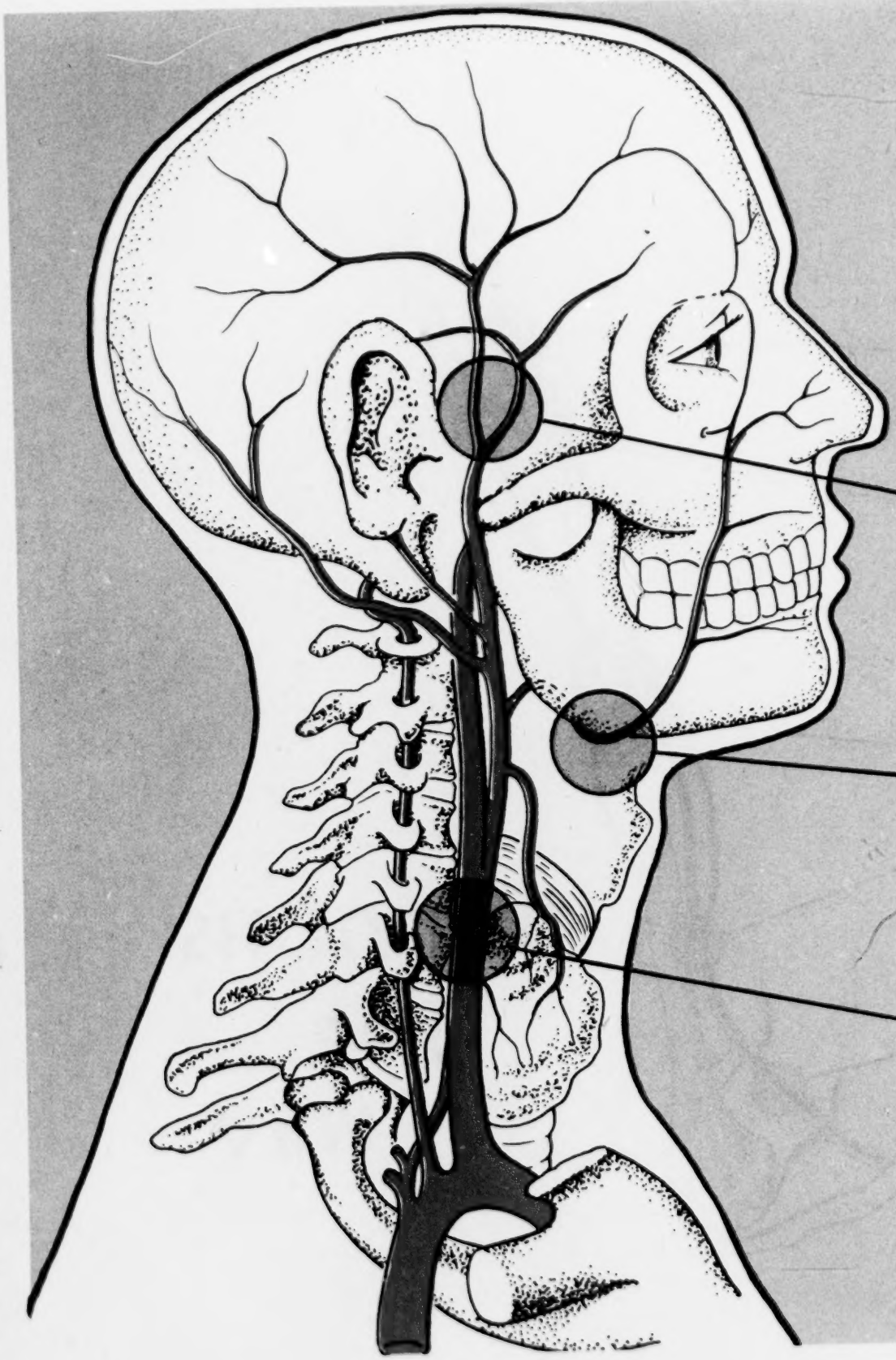
HEAD and NECK



Temporal

Facial

Carotid

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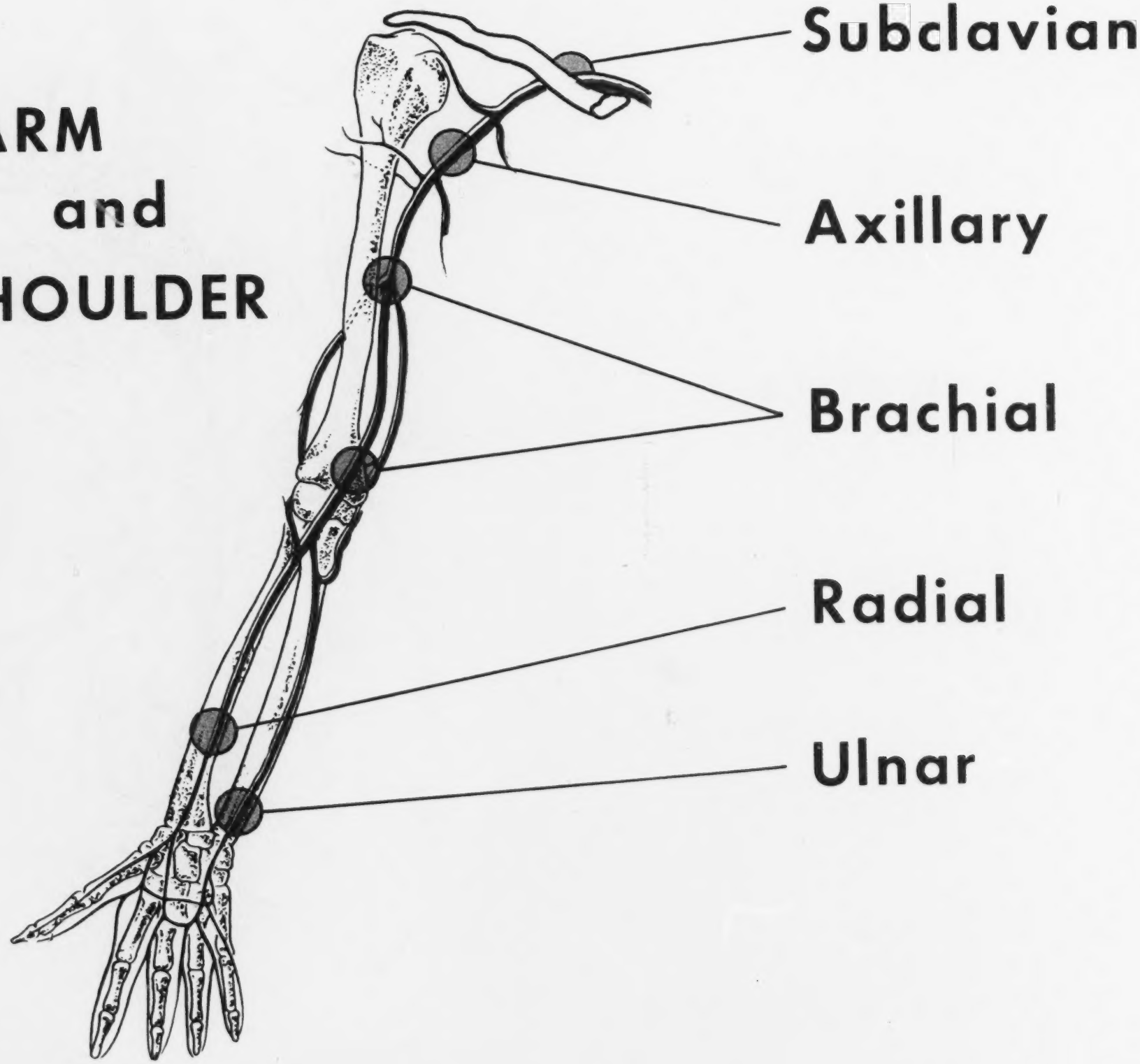
ARM and SHOULDER



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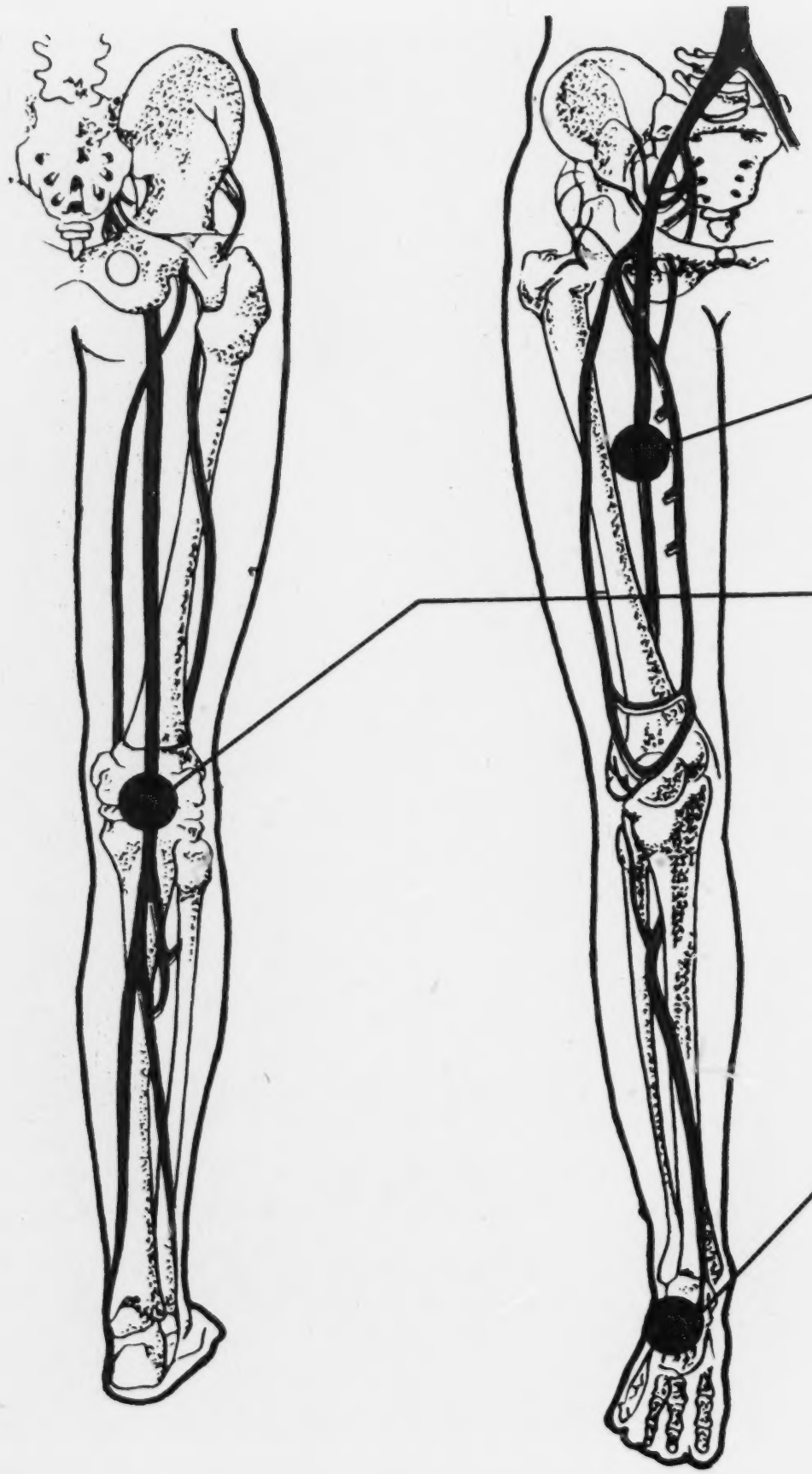
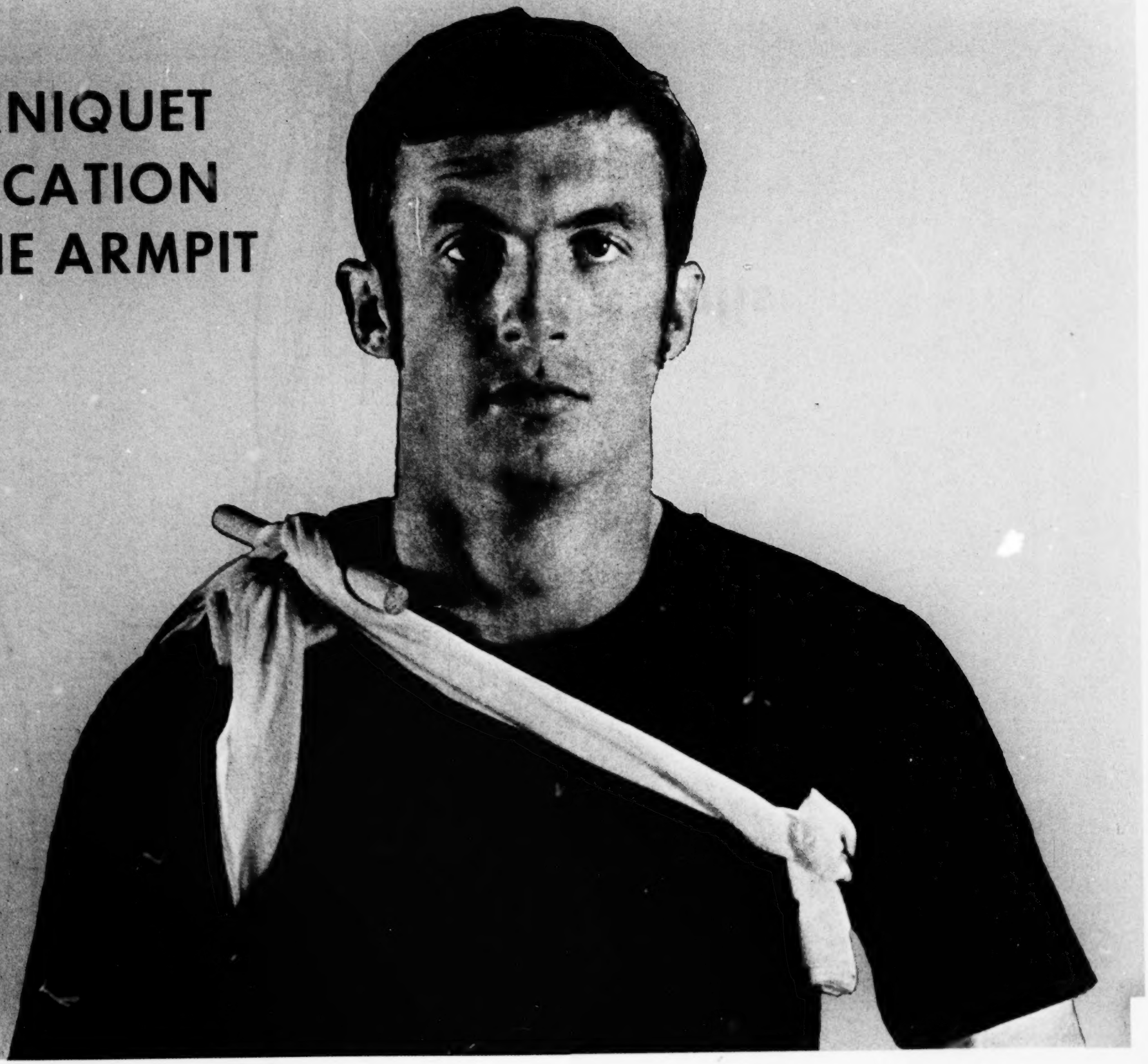


TOURNIQUET APPLICATION AT THE ARMPIT



CONSTRICTING
BANDAGE

Physical Shock

THIRD FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: One-half Hour

SHOCK AND FAINTING

The Third Fundamental of First Aid

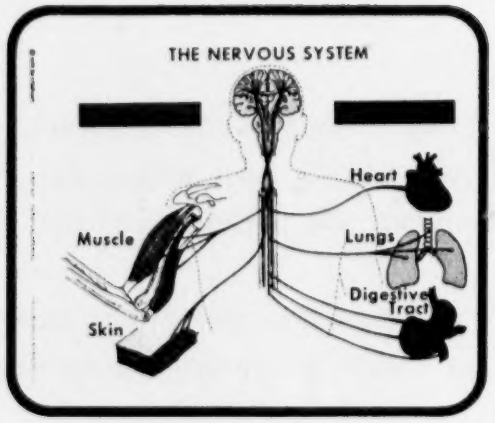
Physical shock follows every serious injury to some extent. It may develop immediately, or be delayed several hours. But when it occurs, it may affect the heart, the lungs, the digestive tract and other vital organs directly and often results in a complete loss of consciousness. Even when the victim of shock maintains consciousness, he is usually immobilized, loses his powers of reasoning to some extent and temporarily loses control of his body functions.

Shock is a serious condition. And, while it does not pose the immediate threat to life that a stoppage of breathing or uncontrolled bleeding represents, it is very real danger to the victim. If it is not treated promptly and correctly, it can – in combination with serious injuries – be fatal.

When giving first aid, a person should be aware that someone who has lost a great deal of blood, or who has experienced intense pain is a likely candidate for phsycial shock. It is therefore strongly suggested that treatment for shock be given after every *serious* injury.

The causes, symptoms and treatment for physical shock and fainting (a mild form of shock) have been outlined in this unit. This information has been written into an easy-to-use outline for first aid instructors, including suggested demonstrations and student exercises. Supporting visuals (transparencies for overhead projection) have been provided to reinforce key ideas within the unit.

Instructor's Notes



Visual No. 22
"The Nervous System"

This visual has two parts, a base transparency illustrating sensory and motor functions of the cerebrospinal system and an *overlay* dealing with the sympathetic nervous system.

During your discussion of the cerebrospinal system, present the base transparency without the overlay (it is hinged at the top of the base transparency and may be laid over the back of the projector).

Suggested Comments and Order of Presentation

I. The Nervous System

A. The nervous system plays a key role in the development of physical shock. A knowledge of this system will be helpful in understanding the causes, symptoms and treatment of shock.

B. The nervous system is the body's communications network; it carries information to and from the brain, coordinating all the body's responses and functions.

[Use base visual here.]

1. It actually includes two separate, but interconnected and coordinated systems: the *cerebrospinal system* and the *sympathetic system*.

a. The cerebrospinal system is made up of the brain and the spinal cord.

(1) In the brain, there is a concentration of nerve centers, each controlling a specific part of the body.

(2) Nerves lead out of these centers and come together at the base of the brain in the spinal cord.

(3) They follow the spinal cord down the center of the backbone, branching off to all parts of the body along the way.

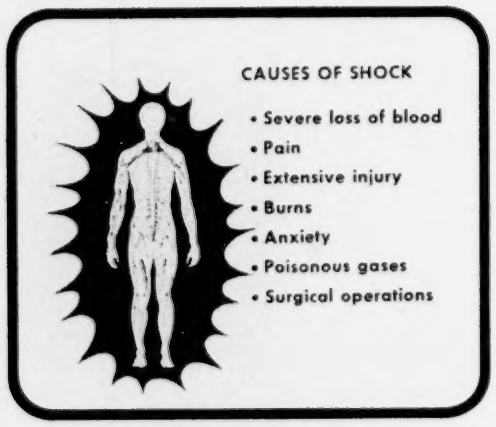
(4) These nerves are like telephone lines, carrying messages to and from the brain. And there are two types:

(a) *Sensory nerves*, which lead to the surface of the skin and carry back to the brain impressions of heat, cold, touch and pain.

(b) *Motor nerves*, which lead to the muscles and carry impulses from the brain causing movement.

Instructor's Notes	Suggested Comments and Order of Presentation
When you are ready to introduce the sympathetic system, place the overlay over the base transparency. Both transparencies will be projected at once, giving a single, composite illustration for viewing.	[Add overlay here.] b. The sympathetic system is a series of nerve centers along the spinal cord in the chest and abdominal cavity. (1) The nerves in this system interconnect with those in the cerebro-spinal system. (2) It is the sympathetic system that controls the vital organs: the heart, lungs, digestive tract and excretory organs. (3) It is this system which is believed to be most directly involved in cases of physical shock.

Instructor's Notes



Visual No. 23
"The Causes of Shock"

Use a *revelation shield* when presenting this visual. With a piece of paper or cardboard, cover the headings not yet discussed. Then, as each new subject is introduced, slide this "shield" down on the transparency, exposing the appropriate heading. This will help your students focus on the idea you're discussing and discourage them from reading ahead to topics not yet covered.

Suggested Comments and Order of Presentation

II. The Causes of Physical Shock

A. Physical shock occurs to some degree after every injury. It may develop at the time of injury or it may be delayed by several hours; but it is always dangerous to the victim.

1. During shock, the functions of the vital organs are affected. The heart beats rapidly and weakly, for instance, and the respiratory system becomes overactive and inefficient.

2. This is believed to be due to a lack of proper balance within the sympathetic nervous system that controls these organs.

[Use visual here.]

3. The causes of physical shock include:

   a. Severe loss of blood;

   b. Intense pain;

   c. Severe or extensive injury;

   d. Burns;

   e. Anxiety;

   f. Poisonous gases;

   g. Surgical operations.

4. Other causes may be excessive heat or cold, poison, certain illnesses and intense emotion.

Instructor's Notes

Visual No. 24
"Symptoms of Shock"

Use a *revelation shield* when presenting this visual.

Your outline includes additional symptoms (not shown on the visual). These are less frequent symptoms of shock which should be discussed briefly, but normally do not call for visual reinforcement.

You may add the information to the visual, if you wish, by writing them under the printed symptoms with a felt-tipped marking pen.

Suggested Comments and Order of Presentation

III. The Symptoms of Shock

A. The symptoms of shock are both physical and emotional.

[Use visual here.]

1. Physical changes observed during shock are:

   a. A dull, chalk-like appearance to the victim's skin, regardless of color;

   b. An anxious or dull expression;

   c. Closed or partially-closed eyelids;

   d. Shallow, irregular breathing;

   e. Weak, rapid pulse;

   f. Cold, moist skin;

   g. Shaking of the arms and legs as if chilled;

   h. Vomiting.

2. Emotional changes which may result are:

   a. Partial or total unconsciousness;

   b. Slow response to questions, or unrelated answers.

3. These symptoms are the result of specific changes known to take place in the body during shock.

   a. There is a decided drop in blood flow, believed to be caused by the

Instructor's Notes

Suggested Comments and Order o sentation

nervous system's loss of control over certain small blood vessels.

b. The blood vessels in the abdominal cavity dilate and become swollen and congested with blood.

c. The blood moves to fill the enlarged blood vessels within the body and surface circulation is decreased.

d. The victim becomes pale, cold and clammy as a result.

e. With less blood flowing to the heart, the heart must speed its action. The heart beat is faster, and the pulse is rapid and weak.

f. With a decreased flow of blood to the lungs, less air is needed to supply oxygen, and breathing becomes shallow or irregular.

g. The brain suffers from a lack of oxygen-rich blood and loses its ability to function. The victim's powers of reasoning and expression are decreased.

h. Nausea and vomiting are caused by the congestion of blood in the abdominal cavity.

Instructor's Notes

Visual No. 25
"Treatment for Shock"

Use a *revelation shield* over the right side of the visual, leaving the illustrations uncovered. You will want to leave this visual on the projector until you have completed your discussion of treatment for shock – including the additional steps in the outline.

Suggested Comments and Order of Presentation

IV. Treatment for Shock

A. Prompt treatment is necessary for a person in shock.

[Use visual here.]

1. Positioning the victim properly is important:

   a. Lay the victim flat. If possible, his head should be lower than the rest of his body (except in cases of head injury).

   b. If the victim is on a stretcher or body splint, elevate the feet six inches or more.

   c. Do not lower the victim's head if you believe he has a fractured skull, or when there is severe bleeding from the head, sunstroke or apoplexy.

2. Clear the victim's mouth of all foreign bodies.

3. Be sure the tongue is forward and not blocking the windpipe.

4. Loosen tight clothing at the neck, the chest and the waist.

5. Keep the victim warm and dry. This is the most important step in treating for shock.

   a. Cover him with any available material (coat, blanket, etc.).

   b. Place blankets or materials under the victim to prevent loss of heat to surfaces below him.

   c. If additional heat is needed, apply heated objects – such as hot water bottles, heated bricks and stones – along the body, between the legs and under armpits.

Instructor's Notes

Suggested Comments and Order of Presentation

(1) Always test heated objects before applying them. The victim won't be able to tell you when they are too hot.

6. If the victim is nauseated and vomits, turn his head to one side. Keep his mouth and face wiped clean.

7. Stimulants may be given to the victim if he is conscious. One effective stimulant is a solution of aromatic spirits of ammonia (one teaspoon in one-half glass of water).

   a. *Do not* give stimulants when there is severe bleeding, internal bleeding, a fracture of the skull, sunstroke or apoplexy.

   b. *Do not* give alcoholic beverages of any kind!

8. If medical help will be delayed, give the patient a half-glass of water at 15-minute intervals.

   a. A solution containing one-half level teaspoon of salt and one-half level teaspoon of soda per quart of water is best.

9. If the victim is unconscious, give a stimulant by inhalation:

   a. Break an ampule of spirits of ammonia, or pour it on a piece of cloth. Pass it beneath the victim's nose for 30 to 40 seconds every 5 minutes.

10. Getting the victim to inhale oxygen is often helpful in cases of shock.

B. Continue treatment as long as there is evidence of shock.

   1. Keep the victim down and quiet. Never allow a person in shock to sit up; additional strain will be placed on his heart and circulation.

   2. Persons in shock tend to relapse. Watch for it and renew shock treatment immediately.

Demonstrate the method of testing and using spirits of ammonia.

Allow the students to inhale from an ampule or cloth containing spirits of ammonia. This will give them an impression of the effect this stimulant has on a person.

Instructor's Notes

Suggested Comments and Order of Presentation

V. Fainting

A. Fainting is a temporary loss of consciousness due to an inadequate supply of oxygen to the brain; it is a mild form of physical shock.

1. It may be caused by:

a. Injury;

b. Physical or mental exhaustion;

c. Excessive heat;

d. Lack of air (oxygen);

e. Intense emotion.

2. The symptoms of fainting are:

a. Dizziness and complaints by the victim that he sees "spots" before his eyes;

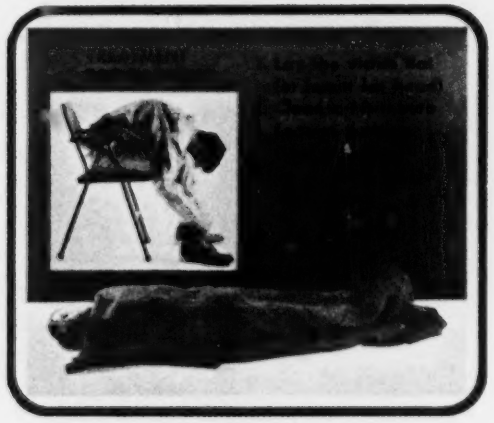
b. Perspiration on the forehead;

c. Weaving or sinking to the floor;

d. Weak and rapid pulse;

e. Shallow breathing.

Instructor's Notes



Visual No. 26
"Treatment for Fainting"

Point out the position of the man at the left of the visual. Explain that unconsciousness can often be prevented if the person assumes this position as soon as early symptoms of fainting are noted.

THE DISCUSSION OF PHYSICAL SHOCK AND FAINTING ENDS HERE. On the next few pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of the information presented in this portion of the course.

Suggested Comments and Order of Presentation

3. Treatment for fainting should be given immediately.

[Use visual here.]

   a. Lay the victim flat, or lower his head below the rest of his body.

   b. Cleanse his mouth.

   c. Loosen clothing at the neck, chest and waist.

   d. Give aromatic spirits of ammonia by inhalation.

   e. Keep the victim quiet and warm.

4. When the victim recovers consciousness, do not allow him to sit up for at least one-half hour.

5. If unconsciousness is prolonged, give treatment for shock and summon medical help.

SHOCK AND FAINTING

The Third Fundamental of First Aid

The following questions will help you evaluate the student's retention of the principles and techniques covered in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions; each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative answers given for each question. Only one of the alternatives is correct.

I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer it *true*. If you feel it is inaccurate, answer *false* and explain why you believe it is wrong.

Question	*Correct Answer*
1. Physical shock occurs to some degree after every injury.	True
2. The nervous system coordinates all the body's responses and functions.	True
3. During shock, there is an increased flow of blood to the brain which inproves a person's reasoning powers.	False (Decreased flow, hampers reasoning)
4. The most important treatment for shock is proper positioning.	False (Keeping the victim warm)
5. Fainting is the temporary loss of consciousness.	True
6. Do not give alcoholic drinks to a victim in shock.	True
7. If there is severe bleeding, do not give stimulants to the victim.	True

II. Completion Questions

Complete the following statements by adding the correct word.

Question	*Correct Answer*
1. The nervous system consists of two separate divisions, the cerebrospinal system and the _____.	Sympathetic system
2. The functions of the vital organs are controlled and coordinated by the _____.	Sympathetic system
3. If the victim of shock is unconscious, give a stimulant by _____.	Inhalation
4. Fainting is the temporary loss of consciousness due to an inadequate supply of _____ to the brain.	Oxygen
5. When treating a person in shock, loosen the clothing at his neck, chest and _____.	Waist
6. Never allow a person in shock to _____.	Sit up or stand

III. Multiple Choice

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three alternative answers and select the one you believe is most accurate.

Question — *Correct Answer*

1. Which of the following are symptoms of shock?
   a. A reddish color to the skin and vomiting.
   b. Heavy breathing at a rate of 12 to 15 times per minute.
   c. Cold, moist skin and a weak pulse.

   Answer: c.

2. The first step in treating for shock is . . .
   a. Give a stimulant.
   b. Sit the victim in a chair.
   c. Lay the victim flat.

   Answer: c.

3. To arouse an unconscious victim of fainting, you should . . .
   a. Give him a solution of water, salt and soda.
   b. Pass an open ampule of spirits of ammonia under his nose.
   c. Give him coffee or tea.

   Answer: b.

4. To provide warmth for a victim of shock, you would . . .
   a. Place a blanket over and under him.
   b. Place containers of hot water near him.
   c. Move him to a warm building.

   Answer: a.

5. Do not lower the head of a victim of shock when . . .
   a. He is partially or totally unconscious.
   b. There is severe bleeding from the head.
   c. He has been vomiting.

   Answer: b.

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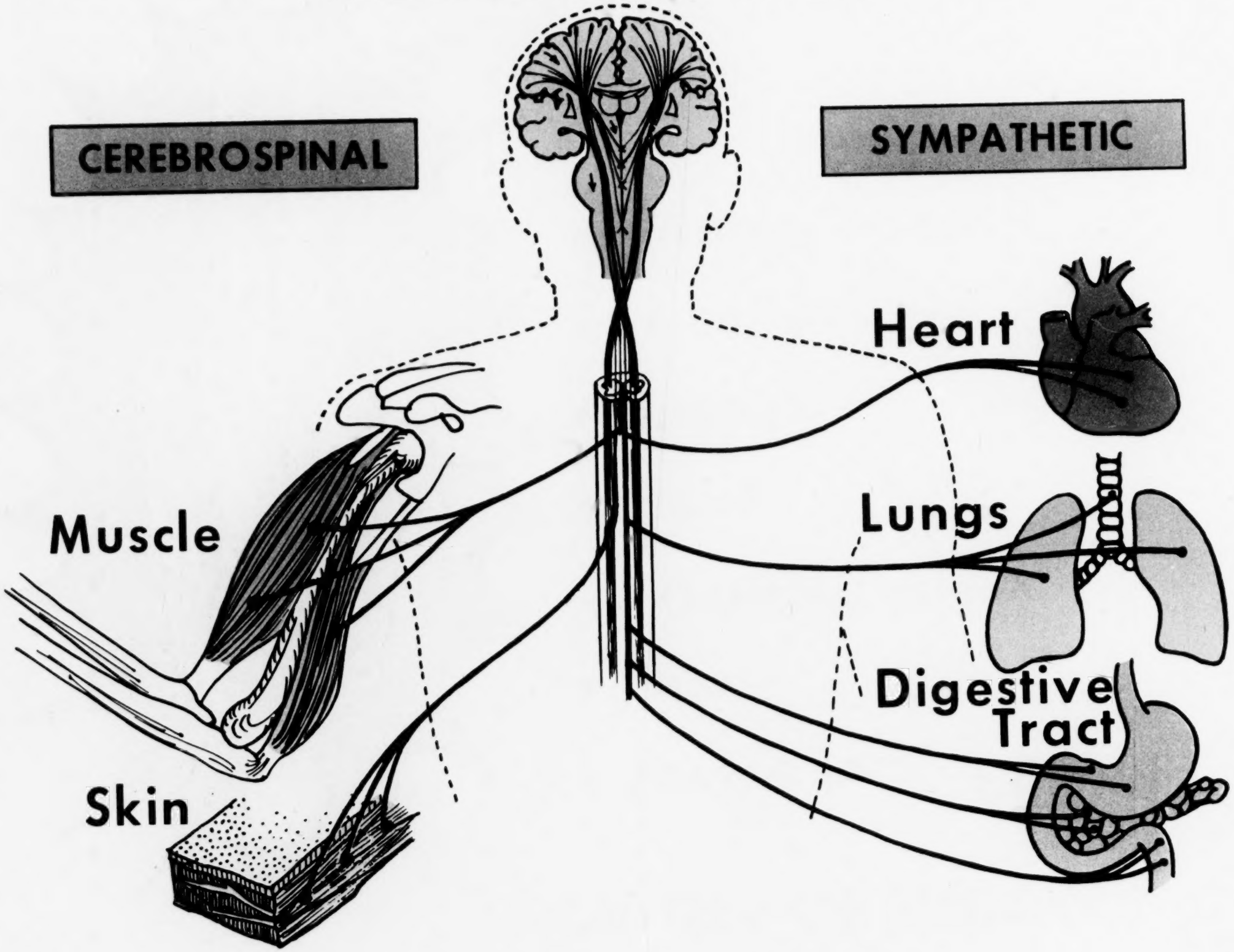
THE NERVOUS SYSTEM



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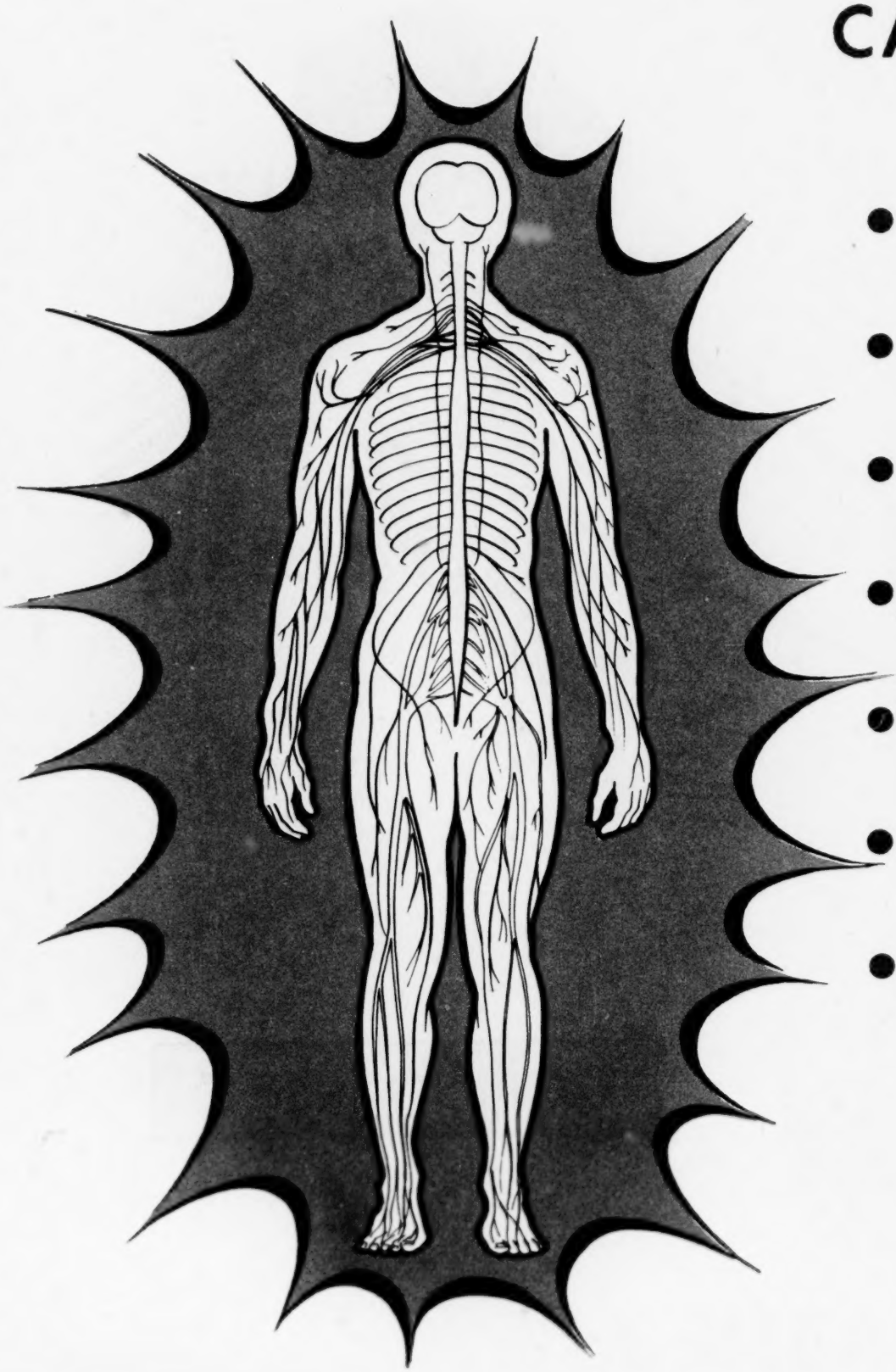
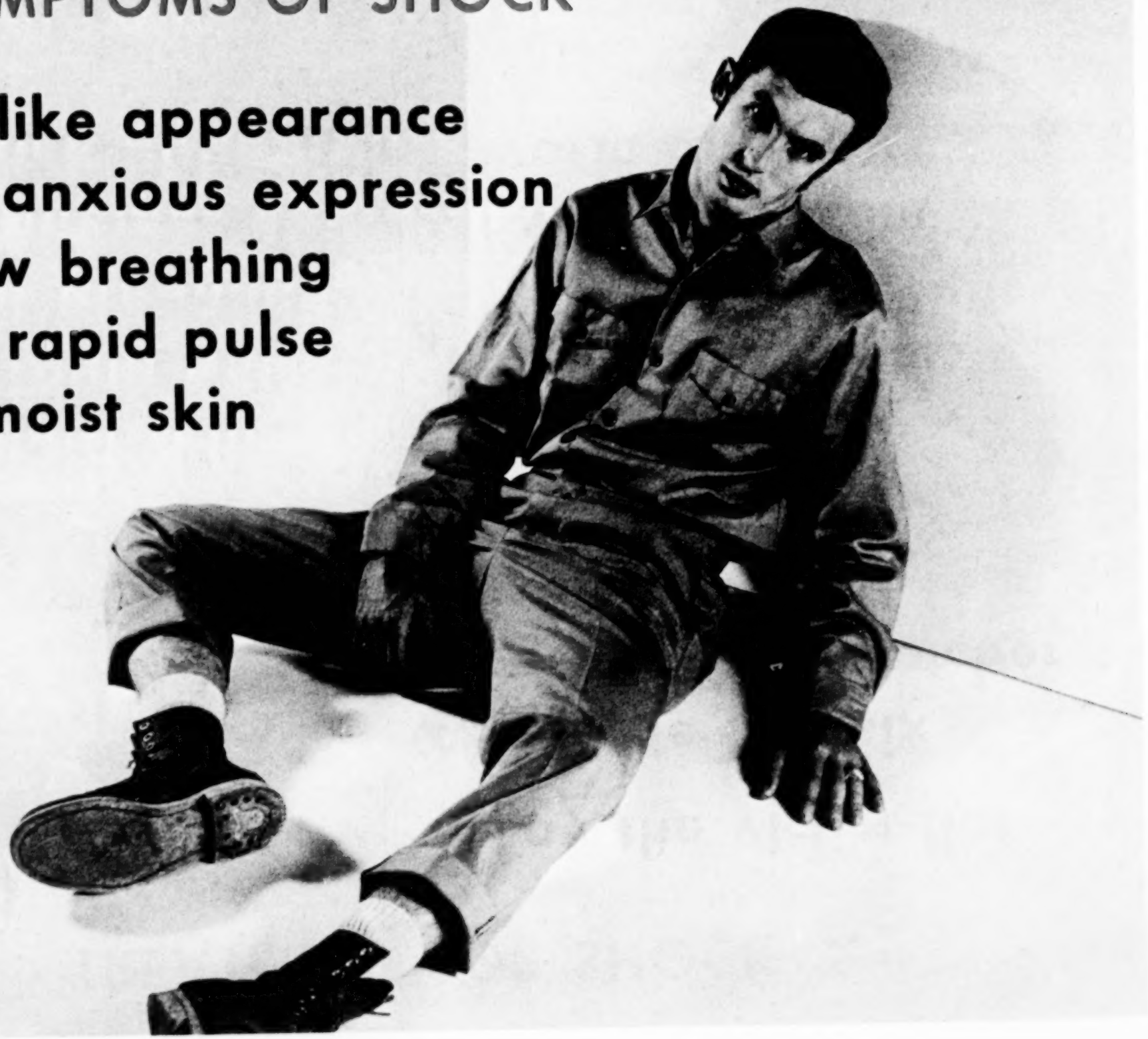


CAUSES OF SHOCK

- Severe loss of blood
- Pain
- Extensive injury
- Burns
- Anxiety
- Poisonous gases
- Surgical operations

SYMPTOMS OF SHOCK

- Chalk-like appearance
- Dull or anxious expression
- Shallow breathing
- Weak, rapid pulse
- Cold, moist skin

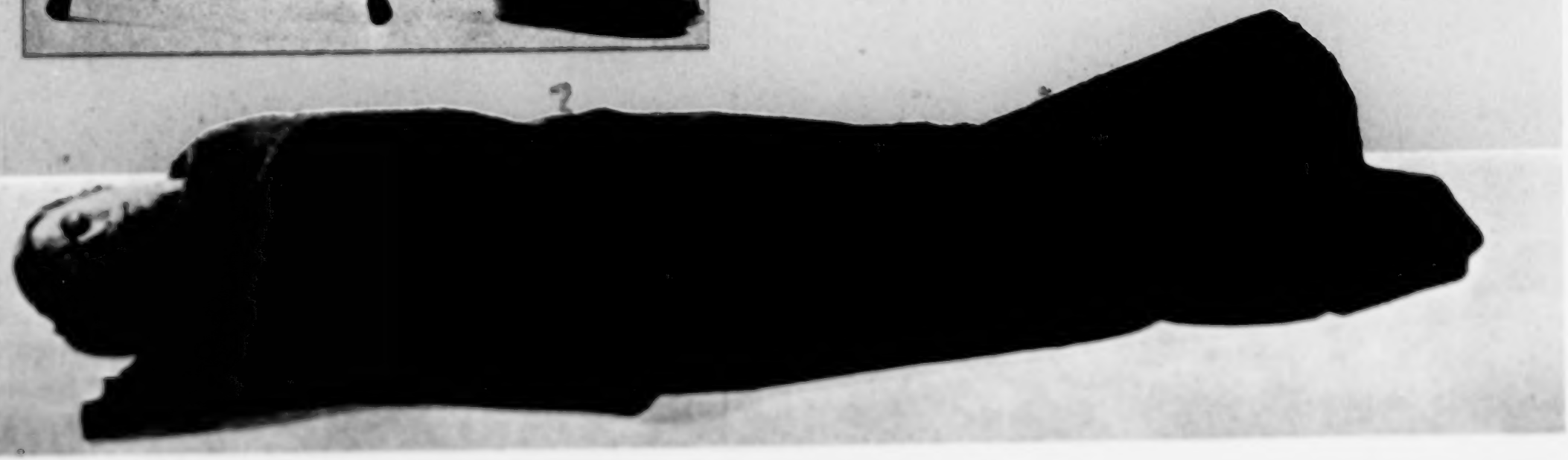


TREATMENT FOR SHOCK

1. Lay the victim flat
2. Elevate feet six inches (if a stretcher is being used)
3. Clear mouth of foreign objects
4. Loosen clothing
5. Keep the victim warm and dry

TREATMENT FOR FAINTING

1. Lay the victim flat (or lower his head)
2. Cleanse his mouth
3. Loosen clothing
4. Give stimulants
5. Keep victim quiet and warm



Open Wounds, Closed Wounds, Burns

FOURTH FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: Three Hours

OPEN AND CLOSED WOUNDS, BURNS AND SCALDS

The Fourth Fundamental of First Aid

For the purposes of first aid, an open wound is any injury involving a break in the skin. It may be a simple scraping wound affecting only the outer layers of skin, or a deep and penetrating wound involving arteries, nerves and muscle tissue. In any case, open wounds require immediate and thoughtful attention.

The great dangers with an open wound are loss of blood and infection. First aid treatment, therefore, is aimed directly at these considerations. Repair of the wounds is strictly the province of a doctor and should be left in his qualified hands.

Techniques for the control of bleeding have already been discussed. These procedures come into play during the treatment of many open wounds. The prevention of infection, however, is of equal importance to the person administering first aid. In this unit, the proper application of protective dressings is discussed in step-by-step detail. These dressings not only help control bleeding; they are equally important as a means of screening out bacteria which may cause infection.

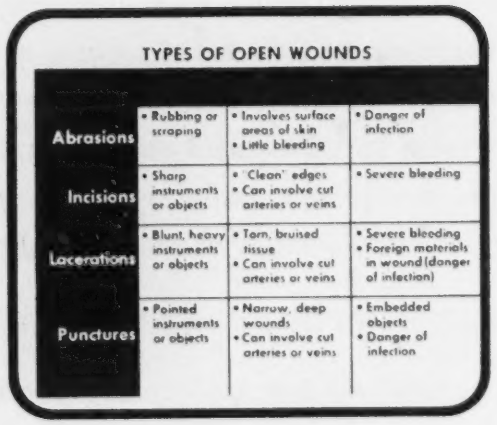
Dressings and treatment for closed wounds (injuries not involving breaks in the skin), burns and scalds are also discussed in this unit.

There is more information in this unit than necessary for most first aid classes. Each type of wound is defined, followed by detailed instructions for treatment of that wound. Some of the material is repetitive, since dressings for different wounds often call for the same materials and procedures. It is suggested that the instructor read the outline carefully before his presentation and select those elements which are most important for the particular class he is teaching. It may be that the treatment for open wounds of the hands, arms and legs is more important to the students in one class than first aid for chemical burns. The instructor may, therefore, choose to limit his discussion of chemical burns to general characteristics and treatment, rather than providing detailed instruction for specific burns on different parts of the body.

The decision is in the hands of the instructor. Whatever his decision, he will find enough information in the following outline to make an effective and comprehensive presentation. The outline which follows includes a number of suggested demonstrations and student exercises designed to help the student learn and retain the skills he needs. Supporting visuals (transparencies for overhead projection) have been provided to reinforce the instructor's presentation and to help clarify the procedure described.

Instructor's Notes

Suggested Comments and Order of Presentation



Visual No. 27
"Types of Open Wounds"

Use a *revelation shield* to present this visual. With a piece of paper or cardboard, cover the headings not yet discussed. Then, as each new subject (type of wound) is introduced, slide this shield down on the transparency, exposing the appropriate information. This will keep your students with you and discourage them from reading ahead to subjects not yet covered.

I. Open Wounds: Types and Characteristics

A. An "open wound" is any break in the skin.

1. These breaks may range from a pin puncture or scratch to an extensive cut, tear or mash.

2. Since bacteria may enter these openings in the skin, there is the danger of infection unless treatment is prompt and correct.

3. In this section of the course, we will be dealing with the proper first aid treatment for open wounds.

[Use visual here.]

B. In first aid, open wounds are placed in four categories: abrasions, incisions, lacerations, and punctures.

1. *Abrasions* are caused by rubbing or scraping away the outer layers of skin, leaving the capillary blood vessels exposed.

a. Little blood is lost from a wound of this type.

b. Because abrasions leave large areas of underskin tissues exposed, there is serious danger of infection.

2. *Incisions* are wounds produced by a sharp cutting edge, such as a knife, piece of glass, or metal.

a. They are often deep. Arteries and veins may be cut by an incision, and may bleed freely.

b. In many instances, bleeding washes away bacteria and decreases the

possibility of infection.

c. The edges of an incision are normally "clean." The tissue around the wound is not torn or bruised.

3. *Lacerations* usually result from contact with a blunt, heavy object which can tear and bruise body tissues.

   a. These wounds may pick up foreign matter (dirt, grease or fragments) during injury, which increases the danger of infection.

   b. Deep lacerations can result in cut arteries and veins causing heavy bleeding.

4. *Punctures* are caused by pointed instruments and objects.

   a. The wounds are usually narrow, but deep.

   b. The danger of infection is increased because foreign matter may be left deep in the body by the object causing the injury.

   c. Arteries and veins may be severed, causing heavy bleeding.

   d. The object causing the wound may be embedded in the body of the patient. If so, it *must not be removed!* This is a task for a doctor working under sterile, controlled conditions.

Instructor's Notes

Suggested Comments and Order of Presentation

II. General Care for Open Wounds

A. When giving first aid for open wounds, your objectives are to *stop the bleeding* and *prevent infection*.

1. First, stop the bleeding!

   a. Severe bleeding from an artery should be checked immediately with digital pressure over an appropriate pressure point.

   b. If necessary, apply a constricting bandage or tourniquet to control heavy bleeding.

2. If you are unable to see the wound, cut or tear away the clothing around it.

3. Wipe away foreign particles from the wound using a piece of sterile gauze.

   a. *Do not attempt to remove embedded objects from a wound.*

   b. Leave the application of antiseptics to a doctor.

4. To prevent infection, do not touch the wound with your hands, clothing, or anything that is not sterile.

   a. Cover the entire wound with a sterile bandage compress or sterile gauze.

   b. Tie the bandage in place with a knot over the pad of the compress to help control bleeding.

   c. Protect sterile bandages with an outer dressing made from a cravat or triangular bandage. Make the bandage wide enough to cover the entire sterile dressing.

Demonstrate the preparation of a cravat and a triangular bandage.

Most first aid kits today include prepared cravat and triangular bandages. Nevertheless, students should be able to make these bandages in emergency situations. A knowledge of the procedures used will be helpful.

Instructor's Notes

Suggested Comments and Order of Presentation

5. Bandages should be applied securely, but without being too tight.

   a. When a bandage is too tight, it may interfere with the blood supply to surrounding tissue.

   b. When bandaging a leg or arm, leave the toes or fingers uncovered. Check the bandages often. If the toes or fingers become dark or bluish, circulation may have been cut off by the bandage. Loosen it immediately.

   c. Swelling often follows injury. Therefore, the bandage must be checked often to detect any interference with circulation.

   d. Be careful not to loosen the bandage too much; it may slip off and expose the wound.

   e. Do not apply a wet bandage to an open wound (except when treating burns).

Instructor's Notes

Suggested Comments and Order of Presentation

III. **Dressings for Wounds and Bleeding**

A. Open wounds are treated in different ways. The procedures and materials used depend on the location and extent of the wound.

B. The discussion of dressings in this course will be broken into several sections dealing with different areas of the body. Head wounds will be covered first, then wounds of the upper extremities, wounds of the trunk, and wounds of the lower extremities.

C. In each section, the required materials will be listed, followed by step-by-step instructions for the application of dressings in that region of the body.

D. *Wounds of the Head*. The procedures used to treat various wounds on or about the head will be described here.

[Use visual here.]

1. Wounds and Bleeding from the Scalp, Temple, Ear or Face

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat or triangular bandage.

b. Treatment for wounds at the temple:

(1) Apply the pad of a sterile bandage compress over the wound.

(2) Carry one end down the side of the face and under the chin, the other over the top of the head.

Visual No. 28
"Bandage: Scalp, Temple, Ear or Face"

Instructor's Notes	Suggested Comments and Order of Presentation
Using the visual, point out the location of the compress pad, the cross at the opposite side of the head, and the position of the knot over the compress.	(3) Cross the ends at the temple in front of the ear on the side opposite the injury. (4) Carry the ends around the front and back of the head. (5) Tie the ends over or near the compress pad. (6) Cover the compress with a cravat which is applied in the same manner. c. Treatment for wounds of the ear: (1) Place the compress over the ear. (2) Carry one end under the chin, the other over the head. (3) Cross the ends at the temple in front of the ear on the side opposite the injury. (4) Carry the ends around the front and back of the head. (5) Tie the ends in front of the wounded ear, at the temple. (6) Cover the ear and compress with a cravat which is applied in the same way.
Point out the position of the compress and the knot on Visual No. 28. The illustration for this bandage is at the right on the transparency. Demonstrate the steps in applying a bandage to a wound at the temple.	d. If the wound is on the cheek or front of the face, cross the bandage compress and cravat bandage behind the ear on the side opposite the injury. Bring the ends around the forehead and back of the head and tie over the compress. 2. Extensive Wounds and Bleeding of the Scalp a. The materials required are:

Instructor's Notes

Suggested Comments and Order of Presentation

(1) A sterile bandage compress or sterile gauze;

(2) A cravat bandage;

(3) A triangular bandage.

b. Treatment for extensive scalp wounds:

(1) Cover the wound with a piece of sterile gauze or large sterile bandage compress.

(2) When a bandage compress is used, carry the ends down both sides of the face, carrying one end under the chin.

(3) Cross the ends at the temple.

(4) Carry one end around the forehead, the other around the back of the head.

(5) Tie the ends on the opposite side.

(6) Apply a triangular bandage over the head.

(a) The base should fit snugly across the forehead, just above the eyebrows.

(b) The apex of the bandage (point of the triangle) is at the back of the neck.

(c) Bring the two ends of the bandage around the head above ears.

(d) Cross under bony prominence on the back of the head.

(e) Return the ends to the middle of the forehead.

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(f) Tie just above the eyebrows.

(g) Fold up the apex and tuck in snugly over the crossed ends at the back of the head.

(7) If sterile gauze is used, be careful not to move it from the wound.

3. Wounds of the Forehead or Back of Head

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the forehead or back of head:

(1) Apply the sterile pad over the injury.

(2) Hold the bandage in place and pass the ends around the head above the ears.

(3) Cross the ends behind under the bony prominence at the back of the neck.

(4) Tie the ends in front, near or over the wound.

(5) Cover the compress with a cravat bandage in the same manner.

(6) For wounds at the back of the head, reverse the procedures, crossing the ends of the compress bandage at the forehead and tying them over the compress in back.

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Instructor's Notes

Visual No. 29
"Bandage: Injured Eye"

Suggested Comments and Order of Presentation

4. Injuries of the Eye

   a. The materials required are:

      (1) A sterile compress bandage.

   b. Treatment for an injured eye:

[Use visual here.]

      (1) Center the pad of the bandage over the injured eye.

      (2) Carry the end on the injured side below the ear to the back of the head. Carry the other end over the ear on the opposite side.

      (3) Tie the ends below the bony prominence at the back of the head.

      (4) Bring both ends over the top of the head.

      (5) Slip the *longer* end under the bandage where it passes above the uninjured eye and raise the dressing.

      (6) Tie the ends at the top of the head.

5. Wounds and Bleeding of the Nose

   a. The materials required are:

      (1) Sterile bandage compress.

   b. Treatment for wounds at the nose:

Instructor's Notes

Visual No. 30

"Bandage: Wounds of the Nose"

A simple demonstration showing how the tails are split and cupped over the nose can clarify the technique of applying this dressing.

Using Visual No. 30, point out where pressure should be applied to control nasal hemorrhage.

Suggested Comments and Order of Presentation

[Use visual here.]

(1) Split the tails of a sterile bandage on both sides of the sterile pad.

(2) Cup the pad to fit over the nose.

(3) Pass top tails, one on each side of the head, below the ears and tie at back of neck.

(4) Pass bottom tails, one on each side of the head, above the ears and tie in back of the head.

c. Nose bleeds should also receive prompt attention. Apply a sterile bandage compress and . . .

(1) Keep the person in a sitting position with his head tilted backwards.

(2) Apply pressure to both sides of the nose with the index finger and thumb.

(3) The patient should not blow his nose for several hours.

(4) If bleeding persists, seek medical attention.

6. Wounds and Bleeding of the Chin

a. The materials required are:

(1) A sterile bandage compress.

b. Treatment for wounds of the chin:

(1) Split the tails of a sterile bandage compress.

Instructor's Notes

Suggested Comments and Order of Presentation

(2) Apply the pad of sterile bandage compress over the wound.

(3) Pass the top tails, one on each side of the neck below the ears and tie at the back of the neck.

(4) Pass the bottom tails, one on each side of the head, in front of the ears.

(5) Tie at the top of the head.

7. Wounds and Bleeding of Neck or Throat

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the neck or throat:

(1) Place the sterile bandage compress over the wound.

(2) Pass the ends around the neck and tie them loosely over the compress.

(3) Place the center of the cravat bandage over the compress.

(4) Carry the ends around the neck, cross them, bring them around the neck again and tie loosely.

(5) If bleeding is severe, apply pressure directly in the wound.

Demonstrate the application of this dressing for the students. You'll want to stress the importance of tying the bandage loosely.

E. Wounds of the Upper Extremities

1. Wounds and Bleeding of the Shoulder

Instructor's Notes

Visual No. 31

"Bandage: Wounds of the Shoulder"

Demonstrate the application of the triangular bandage and the cravat bandage.

If time permits, pair the students off and allow them to apply this bandage. Experience in handling the sterile bandage compress and covering bandages is important at this point, more important than the steps used to apply this particular dressing. Familiarity with the bandages now will make it easier to understand the more complex dressings to follow.

Suggested Comments and Order of Presentation

a. The materials required are:

(1) A sterile bandage compress;

(2) A triangular bandage;

(3) A cravat bandage.

b. Treatment for a wound of the shoulder:

[Use visual here.]

(1) Place the compress pad over the wound.

(2) Bring ends down under armpit and cross them.

(3) Carry to the top of compress and cross them again.

(4) Carry one end across the chest, the other across the back.

(5) Place a soft pad in the opposite armpit and tie the ends over it.

(6) Cover with a triangular bandage.

(a) Place the apex of the triangular bandage high up on the shoulder.

(b) Place base of the triangle on the upper arm.

(c) Carry ends around upper arm and tie on the outside of the arm.

(7) Center a cravat bandage under the opposite armpit.

(8) Bring ends of cravat bandage over the apex of the triangular bandage and tie a single knot.

Instructor's Notes	Suggested Comments and Order of Presentation
	(9) Fold the apex over and tie the second knot in the cravat bandage.
	(10) Place a triangular sling on the forearm.
	2. Wounds and Bleeding of the Armpit
	a. The materials required are:
	(1) A sterile bandage compress;
	(2) Two cravat bandages.
	b. Treatment for wounds at the armpit:
	(1) Center a sterile bandage compress over the wound.
	(2) Cross the ends over the shoulder, and carry one end across the back, the other across the chest.
	(3) Tie over a soft pad in the opposite armpit.
Demonstrate the application of this dressing, showing how a hard object can be applied in the armpit, when necessary, to stop bleeding.	(4) If the bleeding is severe, place a hard covered object about the size of an egg (a piece of stone, wood or coal) over the sterile pad and push it well up into the armpit. Hold in place by a cravat bandage.
	(a) Center the cravat bandage over compress and hard object.
	(b) Bring the ends over the shoulder and cross them.
	(c) Pass the ends around the chest and back.
	(d) Tie them in the opposite armpit over a pad.
	(5) Bring injured arm down.

Instructor's Notes

Visual No. 32
"Dressing: Dismembered Arm"

Point out the *subclavian* pressure point on the visual. Stress the importance of controlling bleeding in an injury of this type.

Demonstrate the application of digital pressure at the subclavian pressure point.

Suggested Comments and Order of Presentation

(6) Secure the arm firmly to the chest by placing cravat bandage around arm and chest, tying it securely on opposite side of the chest over a pad.

(7) Place forearm in sling made of an open triangular bandage.

3. Arm Torn from the Body

a. The materials required are:

(1) Sterile gauze;

(2) A sterile bandage compress;

(3) A cravat bandage.

b. Treatment for the damaged shoulder:

[Use visual here.]

(1) When a limb has been torn from the body at a joint, there is excessive bleeding from large blood vessels.

(2) Cover your hand with sterile gauze (if available) and manually pinch the bleeding vessels.

(3) An assistant should make digital pressure over the subclavian pressure point.

(4) Pack sterile gauze into the wound firmly.

(5) Apply the sterile pad over the center of the injury.

(6) Carry one end around the chest and the other around the back and

Instructor's Notes

Suggested Comments and Order of Presentation

tie securely over a soft pad in the opposite armpit.

(7) Center a cravat bandage over the sterile pad and tie in same manner.

4. Dressing for an Amputated Arm

a. The materials required are:

(1) Sterile gauze;

(2) A triangular bandage.

b. Treatment for an amputated arm:

(1) Apply digital pressure at the subclavian pressure point until tourniquet has been properly applied.

(2) Pack sterile gauze or gauze taken from a sterile bandage compress and insert into the wound firmly.

(3) Hold the dressing in place by applying a triangular bandage.

(a) Place the stump in the center of the triangular bandage with base against inside of armpit.

(b) Bring apex of the bandage over the stump, and up on the outside of arm or shoulder.

(c) Cross the ends on the outside of the stump, then bring them around the arm and cross again under the arm.

(d) Bring the ends to the front of the arm and tie securely.

(e) Fold the apex over the knot and tuck it under.

Instructor's Notes

Visual No. 33
"Bandage: Arm, Forearm and Elbow"

Use a *revelation shield* (a piece of cardboard or heavy paper) to cover the right side of the transparency while you are discussing wounds of the arm, forearm and wrist.

Suggested Comments and Order of Presentation

(4) Amputation of an extremity is an exception to the rule concerning the application of a tourniquet. *The tourniquet should be left in place and removed only by a doctor.*

5. Wounds and Bleeding of the Arm, Forearm and Wrist

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage;

(3) A triangular bandage.

b. Treatment for wounds of the arm, forearm and wrist:

[Use visual here.]

(1) Place the pad of a sterile compress over the wound.

(2) Wrap the ends several times around the arm and tie them over the compress pad.

(3) Place the center of a cravat bandage over the pad.

(4) Pass the ends around the arm, cross, continue around the arm.

(5) Tie the ends over pad.

(6) Control arterial bleeding of arm with digital pressure over the artery at an appropriate pressure point.

(7) Apply a constricting bandage over uninjured tissue, above and as near the wound as possible.

Instructor's Notes

Suggested Comments and Order of Presentation

(8) If necessary, a tourniquet can be applied over the nearest pressure point above the wound.

(a) Place the forearm and hand in triangular bandage sling.

6. Wounds and Bleeding of the Elbow

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage;

(3) A triangular bandage.

b. Treatment for wounds of the elbow.

(1) Apply a sterile bandage compress over the wound.

(2) Pass the ends around the elbow.

(3) Cross them again and carry them around the arm just above the elbow.

(4) Cross them again and carry them around the forearm just below the elbow.

(5) Tie the ends on the outer side of forearm.

(6) Cover with a cravat bandage.

(a) Place the center of the cravat over the point of the elbow.

(b) Pass the ends around the arm and cross them at the bend of the elbow.

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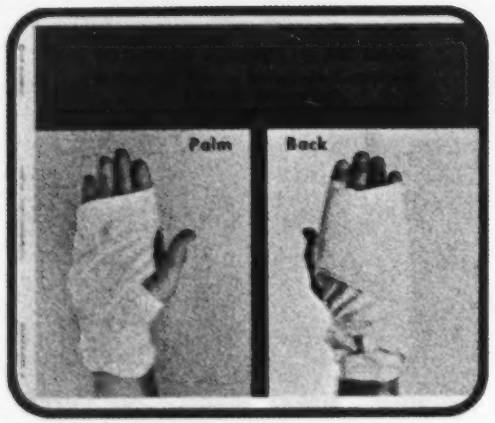
Move the *revelation shield* to the left side of the transparency, exposing the illustration showing the bandage for wounds at the elbow.

Instructor's Notes	Suggested Comments and Order of Prentation
	(c) Bring the ends around the arm again and cross them above the point of the elbow.
	(d) Cross them again at the bend of the elbow, and carry the ends around the forearm, tying them at the outer side below the point of the elbow.
	(7) The elbow should be bent slightly while the dressing is being applied. This will help avoid making the bandage too tight.
Demonstrate the application of digital pressure at the axillary pressure point.	(8) To control arterial bleeding at the elbow, apply pressure with the fingers over the *axillary* pressure point at the inside of the upper arm.
	(9) Then, depending on the extent of bleeding, apply either a constricting bandage or a tourniquet.
	(a) If a constricting bandage is used, apply it over uninjured tissue above and near the wound.
	(10) The forearm and hand should be placed in a triangular bandage sling to limit movement of the elbow.
	7. Wounds and Bleeding of Palm of the Hand
	a. The materials required are:
	(1) A sterile bandage compress;
	(2) A cravat bandage;
	(3) A triangular bandage.

Instructor's Notes



Visual No. 34
"Bandage: Wounds of the Hand"

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Cover the right side of the transparency with a *revelation shield* (piece of cardboard or paper) while discussing wounds of the palm.

Demonstrate the application of digital pressure over the *ulnar* and *radial* pressure points.

Suggested Comments and Order of Presentation

b. Treatment for wounds in the palm of the hand:

[Use visual here.]

(1) Apply a sterile bandage compress over area of wound.

(2) Pass ends several times around hand and wrist.

(3) Tie them over the pad in the palm.

(4) Place the center of cravat bandage over the pad.

(5) Cross the ends at the back of the hand.

(6) Bring one end around the little finger side of the hand.

(7) The other end should be brought between thumb and forefinger.

(8) Cross the ends well back of the palm and bring them around the wrist to the back.

(9) Cross them again at the back of the wrist, then again at the inside of the wrist.

(10) Tie the ends at the back of the wrist.

(11) To control arterial bleeding of the palm, apply digital pressure over a convenient pressure point at the forearm.

(12) Then apply a constricting bandage or a tourniquet, whichever is most appropriate.

(a) Apply a constricting bandage over uninjured tissue above and as near the wound as possible, or apply a tourniquet over pressure points at the wrist.

Instructor's Notes

Suggested Comments and Order of Presentation

(13) Place the arm and hand in a triangular bandage sling.

8. Wounds and Bleeding of Back of Hand

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage;

(3) A triangular bandage.

b. Treatment for wounds of the back of the hand:

Use the *revelation shield* to cover the left side of Visual No. 34 while discussing the dressing for wounds of the back of the hand.

(1) Apply a sterile bandage compress over the wound.

(2) Pass the ends several times around the hand and wrist.

(3) Tie over the pad.

(4) Place the center of a cravat bandage over the pad.

(5) Cross the ends at the palm of the hand.

(6) Bring one end around the little-finger side of the hand.

(7) Bring the other end between the thumb and forefinger.

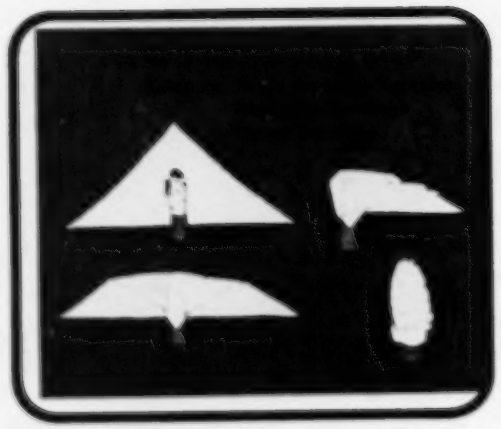
(8) Cross ends at the back of the hand and carry them around the wrist.

(a) Cross them at inside of the wrist.

(9) Tie the ends at the back of the wrist.

(10) To control arterial bleeding, use the same techniques described in the preceding section.

Instructor's Notes



Visual No. 35
"Extensive Wounds of the Hand"

Suggested Comments and Order of Presentation

(11) Place the forearm and hand in a triangular bandage sling.

9. Extensive Wounds and Bleeding of the Hand

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage;

(3) A triangular bandage.

b. Treatment for extensive wounds of the hand:

[Use visual here.]

(1) Apply sterile gauze or a large sterile bandage compress over the wound.

(2) If there are multiple wounds of fingers, separate the fingers with sterile gauze.

(3) Pass the ends of the bandage compress several times around the hand and wrist and tie over the pad.

(4) Cover with a triangular bandage.

(a) Place the base on the inner side of wrist.

(b) Bring the apex down over the palm of the hand.

(c) Return the apex around the tips of the fingers and over the back of the hand to a point above the wrist.

Instructor's Notes

Demonstrate the proper application of the triangular bandage for extensive wounds of the hand. This bandage is often necessary for injuries to men working with heavy machinery. Your students should understand its application completely.

Pair the students off and allow them to apply a triangular bandage to the hand of their partners.

Suggested Comments and Order of Presentation

(d) Carry one end of the triangle over the little-finger side, across the back of the hand and wrist.

(e) Bring the other end over the thumb, across the back of the hand and wrist.

(f) Cross the ends on the inside of the wrist.

(g) Bring them to the back of the wrist and tie.

(h) Pull the apex over the knot and tuck it under.

(5) This bandage may also be used for an injury to the back of the hand.

(6) Control arterial bleeding with the same methods used for arterial bleeding of the palm of the hand.

(7) Place the forearm and hand in a triangular bandage sling.

10. Wounds and Bleeding of Fingers

a. The materials required are:

(1) A small sterile bandage compress or adhesive compress.

(2) Triangular bandage.

b. Treatment for wounds of the fingers:

(1) Apply sterile compress over the wound.

(2) Pass the ends several times around finger, and tie over the pad.

(3) If an adhesive compress is being used . . .

Instructor's Notes

Demonstrate the application of digital pressure over the *ulnar* pressure points.

Suggested Comments and Order of Presentation

(a) Remove cover from the adhesive by pulling from the center. Be careful not to touch the sterile pad.

(b) Place the sterile pad over the wound.

(c) Pass end around finger and press it down.

(4) Dress each finger separately.

(5) If injury is extensive or severe, dress as far an extensive wound of the hand and apply a triangular bandage sling.

(6) If there is arterial bleeding, apply pressure with the fingers over the *ulnar* pressure points at the inside of the wrist.

11. Wounds at the End of a Finger

a. The materials required are:

(1) A small sterile bandage compress.

b. Treatment for wounds at the end of finger:

(1) Apply the sterile bandage compress over wound so that the tails hang down the front and back of the finger.

(2) Hold the tails securely at middle of the second bone of the finger.

(3) Make one circular turn with one of the tails above that point to anchor the bandage.

(4) Carry the other tail to the end of the finger.

(5) With a circular turn, bind in the edges of the compress.

(6) Carry the tail in spiral turns to the starting point.

(7) Omitting the first turn, spiral the other tail in the opposite direction.

(8) Tie the ends on the back of the finger.

F. Wounds of the Trunk (Chest, Abdomen, Groin and Hips)

1. Wounds and Bleeding of Chest between the Shoulders

a. The materials required are:

(1) A sterile bandage compress;

(2) A triangular bandage.

b. Treatment for wounds of the chest between the shoulders:

[Use visual here.]

(1) Place the pad of a sterile compress over the wound so the ends are located diagonally across the chest.

(2) Pass one end under the armpit, and the other over the shoulder, and return both to the chest.

(3) Tie the ends over the compress.

(4) Cover the compress and chest with a triangular bandage.

(a) Center the base at lower part of the neck. Allow the apex to drop down over the abdomen.

(b) Carry the ends around the outside of the shoulders and under the armpits.

Visual No. 36
"Dressing: Wound of Chest Between Shoulders"

Instructor's Notes

This bandage is identical to the one shown in Visual No. 36. It is, of course, tied at the back, meaning the positions are reversed on the patient.

Suggested Comments and Order of Presentation

(c) Bring the ends together at the chest and tie them above the apex.

(d) Turn up the apex of the bandage and tuck it over the knot.

2. Wounds and Bleeding of Back between the Shoulders

a. The materials required are:

(1) A sterile compress bandage;

(2) A triangular bandage.

b. Treatment for wounds on the back:

(1) Place the pad of the compress over the wound and position the bandage diagonally across the back.

(2) Carry one end over the shoulder and return it under the armpit to the back.

(3) Carry the other end under the opposite armpit and over the shoulder, and return it to the back.

(4) Tie the ends over the compress.

(5) Cover compress and shoulders with triangular bandage.

(a) Center the base of the triangle at the back of the neck allowing the apex to drop down between the shoulders.

(b) Carry the ends over shoulders and under armpits, around to the back.

(c) Tie over the apex.

(d) Turn the apex up and tuck it over the knot.

3. Wounds and Bleeding of the Abdomen or Side

a. The materials required are:

(1) A sterile bandage compress or sterile gauze;

(2) A cravat bandage.

b. Treatment for wounds of the abdomen or side:

(1) Apply the pad of a sterile bandage compress (or sterile gauze) over the wound.

(2) Pass ends of sterile bandage compress around the body, one end across the back and the other across the abdomen or chest.

(3) Tie the ends on the side over a pad.

(4) Cover with a cravat bandage.

(a) Center the cravat bandage on the side nearest the injury.

(b) Take the ends across the back and abdomen or chest.

(c) Tie on the opposite side over a pad.

(5) If intestines are exposed in the wound, cover with a moist sterile dressing. Do not attempt to replace them. Gently place the sterile dressing against the abdomen, and secure it with clean bandage.

4. Wounds and Bleeding of the Lower Abdomen, Lower Back or Buttocks

a. The materials required are:

Instructor's Notes

Visual No. 37
"Dressing: Wounds of the Lower Abdomen or Back"

Visual No. 38
"Dressing: Groin Wounds"

Suggested Comments and Order of Presentation

(1) A sterile bandage compress or sterile gauze;

(2) Two triangular bandages.

b. Treatment for wounds of the lower abdomen, lower back, or buttocks:

[Use visual here.]

(1) Apply several layers of sterile gauze or pad of a sterile compress over the wound. Pass the ends around the body and tie them over the pad.

(2) Cover this bandage with two triangular bandages.

(a) Tie the apexes together in the crotch.

(b) Bring the base of one bandage up on the abdomen, pass the ends around to the back and tie them.

(c) Bring the base of the other bandage up on the back, pass the ends around the body and tie them at the abdomen.

5. Wounds and Bleeding of the Groin

a. The materials required are:

(1) A sterile bandage compress;

(2) Two cravat bandages.

b. Treatment for wounds of the groin:

[Use visual here.]

(1) Apply a sterile bandage compress over the wound.

Instructor's Notes

Suggested Comments and Order of Presentation

(2) Carry the ends of the bandage up the front and back of the hip, angling them toward the outside.

(3) Cross the ends at the outside of the hip.

(4) Carry the ends across the front and back of the body and tie them at the opposite side.

(5) Cover the compress with two cravat bandages.

(a) Tie the cravat bandages together, end to end.

(b) Place the center of one of the cravat bandages over the compress pad and follow the compress bandage in such a way that the entire bandage is covered.

(c) Pass the cravat bandages around the body at the waist a second time, tying them on the side opposite the wound.

6. Wounds and Bleeding of the Crotch

a. The materials required are:

(1) A sterile bandage compress or sterile gauze;

(2) Two cravat bandages.

b. Treatment for wounds of the crotch:

[Use visual here.]

(1) If sterile gauze is used, place the gauze over the wound and cover with the cravat bandages. The steps used to apply the cravat bandages will be covered later.

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Visual No. 39

"Dressing: Wounds of the Crotch"

Instructor's Notes

Suggested Comments and Order of Presentation

(2) If a sterile bandage compress is used . . .

(a) Place the pad over the wound.

(b) Bring one end up between the buttocks and the hip to the center of the abdomen.

(c) Bring the other end up the center of the abdomen, and pass it *over* the top of the first end.

(d) Fold the short end (first end) back in the direction from which it came (over the second end at the center of the abdomen).

(e) Pass the long end (second end) around the opposite side of the body.

(f) Tie the ends at the side of the hip.

(3) Cover the compress bandage or sterile gauze with two cravat bandages.

(a) Pass one cravat bandage around the body and tie it in the front.

(b) Center the second cravat under the knot of the first.

(c) Pass the two ends of the second cravat bandage between the thighs, bring one end around each hip and tie to the ends of the cravat bandage already in place around the waist.

7. Wounds and Bleeding of the Hip

a. The materials required are:

(1) A sterile bandage compress;

(2) A triangular bandage;

Visual No. 40

"Dressing: Wounds of the Hip"

(3) A cravat bandage.

b. Treatment for wounds of the hip:

[Use visual here.]

(1) Split the tails of the compress;

(2) Place pad over the wound.

(3) Pass top tails around the body and tie over the opposite hip.

(4) Pass one bottom tail around the front of the thigh and the other end over the buttock on the injured side, crossing them below the crotch.

(5) Continue around the thigh and tie on the outside.

(6) Cover with a triangular bandage.

(a) Place the base high up on the thigh with apex pointing toward the armpit.

(b) Bring the ends around the thigh and tie them on the outside.

(7) Circle the body with a cravat bandage and tie a single knot over the apex of the triangular bandage.

(8) Fold the apex over the knot and finish tying the knot.

G. Wounds of the Lower Extremities

1. Wounds and Bleeding of the Thigh

a. The materials required are:

Instructor's Notes

Suggested Comments and Order of Presentation

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the thigh:

(1) Apply the pad of the sterile compress over the wound.

(2) Pass the ends around the thigh and tie over the pad.

(3) Cover with a cravat bandage.

(a) Place the center of the bandage over compress.

(b) Pass the ends around the thigh.

(c) Cross them on the inside of the thigh.

(d) Bring the ends around again, and tie them over the pad.

(4) If there is bleeding, take steps to control it. Apply pressure with the fingers over the *femoral* pressure point inside the upper thigh.

2. Dressing for an Amputated Thigh or Leg

a. The materials required are:

(1) Sterile gauze or gauze from a sterile bandage compress;

(2) A triangular bandage.

b. Treatment for an amputated leg:

(1) Control bleeding with digital pressure until a tourniquet has been applied.

Instructor's Notes

Suggested Comments and Order of Presentation

(2) Pack sterile gauze or gauze from sterile bandage compress into the wound.

(3) Use a triangular bandage to hold the gauze in place.

(a) Make a fold along the base of the triangular bandage and center the base on the back of the thigh.

(b) Place the stump in the center of the bandage.

(c) Carry the apex over the stump to the front of the thigh.

(d) Cross the ends at the front of the thigh.

(e) Pass the ends around the thigh, cross and tie in front.

(f) Fold the apex over the knot and tuck it under.

(4) Apply similar dressing for amputated foot.

(5) The tourniquet should be removed *only* by medical personnel who are equipped to replace lost blood.

3. Wounds and Bleeding of the Knee

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the knee:

[Use visual here.]

(1) Apply the pad of the sterile bandage compress over the wound.

Visual No. 41
"Dressing: Wounds of the Knee"

Instructor's Notes

Suggested Comments and Order of Presentation

(2) Tie it firmly in place.

(3) Center the cravat bandage over the pad.

(4) Bring the ends of the bandage around each side of the leg.

(5) Cross them at the back of knee, pull them forward, and tie them above the knee.

(6) If there is bleeding, take steps to control it.

4. Wounds and Bleeding of Leg

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the leg:

(1) Apply a sterile compress to the wound;

(2) Pass the ends around the leg and tie them over the pad.

(3) Center a cravat bandage over the pad.

(4) Pass the ends around the leg, cross them on the opposite side of the leg, and bring them back to the pad.

(5) Tie the ends over the pad.

(6) If there is bleeding, take steps to control it. Digital pressure may be applied over the *popliteal* pressure point at the back of the knee. A constricting bandage on the uninjured tissue above and as near the

wound as possible may also be applied to control bleeding.

5. Bleeding from Varicose Veins in the Leg

   a. Varicose veins are veins that have become distended or enlarged.

      (1) Exertion may cause them to break, causing heavy bleeding.

      (2) The following steps should be used to treat varicose veins.

   b. The materials required are:

      (1) A sterile bandage compress.

      (2) A cravat bandage.

   c. Treatment for bleeding varicose veins in the leg:

      (1) Lay the person down and elevate the leg.

      (2) Rip or cut the clothing from around the leg.

      (3) Apply the pad of a sterile bandage compress over bleeding vein and pass the ends around the leg and tie them over pad.

      (4) Center the cravat bandage over the pad and pass the ends around the leg.

      (5) Cross the ends on the opposite side of the leg.

      (6) Bring the ends around the leg again and tie over the pad.

6. Wounds and Bleeding of the Ankle

   a. The materials required are:

      (1) A sterile bandage compress.

Instructor's Notes

Visual No. 42
"Dressing: Wounds of the Ankle and Foot"

Suggested Comments and Order of Presentation

b. Treatment for wounds of the ankle:

[Use visual here.]

(1) Apply the pad of the sterile bandage compress over the wound.

(2) Carry one end of the bandage to the top of the instep.

(3) Carry the other end around the back of the ankle to the top of the instep.

(4) Cross the ends and carry them around the bottom of the foot, cross, and return to the instep.

(5) Cross over the instep again, passing the ends around the ankle. Tie the knot over the pad.

(6) If there is bleeding, take steps to control it.

7. Wounds and Bleeding of the Foot

a. The materials required are:

(1) A sterile bandage compress;

(2) A cravat bandage.

b. Treatment for wounds of the foot:

(1) Apply the sterile bandage compress to the wound.

(2) Carry the ends around the foot and ankle.

(3) Tie the ends over the pad.

(4) Center the cravat bandage over the compress, and carry ends around the foot and ankle.

(5) Tie the ends as near the front of the ankle as possible.

8. Extensive Wounds and Bleeding of the Foot

a. The materials required are:

(1) Sterile gauze or a large sterile bandage compress;

(2) A triangular bandage.

b. Treatment of extensive wounds of the foot:

(1) Apply sterile gauze of a large sterile bandage compress over the wound and tie it in place.

(2) Cover with a triangular bandage:

(a) Place the base of triangle at the back of the ankle.

(b) Bring the apex under the sole of the foot, over the ends of the toes and back over the instep, to a point in front of the ankle.

(c) Pass the end at the outside of the foot over the instep.

(d) Cross the other end over the instep.

(e) Bring both ends around the back of the ankle to the front.

(f) Tie them on front of the ankle.

(g) Bring the apex down over the knot and tuck it under.

Instructor's Notes

Suggested Comments and Order of Presentation

9. Wounds and Bleeding of the Toe

   a. The materials required are:

      (1) A small sterile bandage compress;

      (2) A small adhesive compress.

   b. Treatment for wounds of the toe:

      (1) Apply the small sterile bandage compress over the wound.

      (2) Pass the ends around the toe several times and tie them over the pad.

      (3) If the small adhesive compress is used:

         (a) Remove the cover from the adhesive.

         (b) Place the pad around the toe.

         (c) Press one end down smoothly.

         (d) Bring the other end around the other side of toe and press it down.

      (4) If more than one toe is injured, apply a single bandage to each toe.

      (5) Apply a triangular bandage as described earlier for extensive wounds and bleeding of the foot.

      (6) If bleeding is severe, apply pressure with the fingers over the *dorsalis pedis* pressure point at the top of the foot until it is controlled.

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Instructor's Notes	Suggested Comments and Order of Presentation

10. Wound of the End of the Toe

    a. The materials required are:

        (1) A sterile bandage compress (small) or small adhesive bandage;

        (2) A triangular bandage.

    b. Treatment for wound at the end of the toe:

        (1) Apply a compress bandage over the end of the toe.

        (2) If more than one toe is injured, cover each one separately.

        (3) In case of extensive wounds, cover the toes with a triangular bandage as described for extensive wounds of the foot.

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Instructor's Notes

Write the names of these injuries (Closed Wounds) on a chalkboard or a piece of clear transparent film for the students.

If you use a piece of film, write with a felt-tipped marking pen and project the transparency as you discuss the symptoms and treatment for each type of wound.

Suggested Comments and Order of Presentation

IV. Closed Wounds

A. Closed wounds are injuries that occur without breaking the skin. The damage occurs to underlying tissue.

B. These injuries include:

1. Bruises;
2. Strains;
3. Sprains;
4. Ruptures or hernias.

C. Each requires special first aid treatment. The procedures and materials used will be presented in this section of the course.

1. Bruises are caused by contact with blunt instruments or objects.

a. The skin is not broken, but the underlying tissue is injured.

(1) Blood vessels are ruptured causing swelling and discoloration as the blood seeps through surrounding tissue.

b. It's important to understand that a bruise may be external evidence of a more serious injury to underlying structures.

c. Treatment is aimed at limiting swelling and decreasing pain.

(1) Apply cold appliances (ice bags or cold towels) to the wound immediately.

(2) Elevate the affected part to limit the flow of blood into the area.

(3) Check for other injuries such as fractures or dislocations.

2. Strains occur when muscles or tendons have been overworked or stretched.

   a. Symptoms include immediate and sharp pain in the area of the strain, moderate swelling and difficulty in moving the affected part.

   b. Treatment is given to increase circulation in the area and reduce the pain.

      (1) Place the patient in a comfortable position and apply hot appliances.

         (a) Dry heat, as from a heating pad or heated object (wrapped in a towel or blanket) seems to be most effective.

      (2) Rub the part with warm alcohol or witch hazel to relieve the pain.

      (3) Keep the injured part at rest.

3. Sprains result when ligaments and other tissue around a joint are stretched or torn.

   a. They are caused by sudden twisting or wrenching the joint.

   b. The symptoms of a sprain include:

      (1) Pain around the joint;

      (2) Inability to use the joint;

      (3) Rapid and marked swelling;

      (4) Discoloration of the area around the joint.

   c. Treatment for a sprain includes the use of cold appliances and rest.

Instructor's Notes

Visual No. 43
"Dressing for a Sprained Ankle"

Demonstrate the application of this dressing for the students. Sprained ankles are a frequent injury, one that every student should be able to treat properly.

If there is time, pair the students off and have them apply this dressing to their partners.

Suggested Comments and Order of Presentation

(1) Place the joint at absolute rest in an elevated position.

(2) Use cold appliances such as moist, cold towels or an ice pack to relieve pain.

(3) Bind the joint firmly with a cravat bandage.

(4) *Never* strap a sprained joint with adhesive tape. This is a decision for a doctor.

(5) In some cases, a sprain acts very much like a fracture. If there is any doubt, treat the injury as a fracture.

d. When an ankle has been sprained and it is necessary for the injured person to use the foot temporarily to reach a place for further care, you may bind the ankle as follows:

[Use visual here.]

(1) Unlace the shoe, but don't remove it.

(2) Place the center of a narrow cravat bandage under the foot in front of the heel of the shoe.

(3) Bring the ends up and back of the ankle, crossing above the heel, and continue forward.

(4) Cross the ends over the instep and pass them downward toward the arch to make a hitch under the cravat on each side, just in front of the heel of the shoe.

(5) Pull the ends tight and carry the ends back up across the instep.

(6) Tie at the back of the ankle.

4. Rupture or Hernia

   a. The most common form of hernia or rupture is a protrusion of an intestine through the wall of the abdomen.

      (1) Hernias usually result from a weakness of the tissue and muscular strain.

      (2) They become evident when the patient coughs violently, or when he is jarred suddenly. They may also be noticed first when he lifts or pushes something heavy.

   b. The symptoms of a hernia include:

      (1) Sharp, stinging pain at the site of the injury;

      (2) Swelling which varies in size – from the size of a marble to an orange;

      (3) The feeling that "something gave way" in the lower abdomen;

      (4) Tenderness at the site;

      (5) Nausea and vomiting.

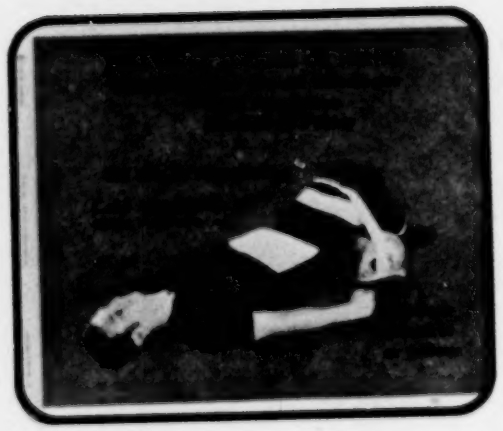
   c. To treat a hernia, lay the patient flat on his back with his knees drawn up.

[Use visual here.]

      (1) Apply two narrow cravat bandages:

         (a) Center one cravat across the top of the thighs halfway between the hips and knees.

         (b) Pass the ends around the thighs and cross them under the bend in the knees.



Visual No. 44
"Treatment: Rupture or Hernia"

Instructor's Notes

It is critical that the person giving first aid avoids forcing the organs back in place with a hernia. Stress this point during the presentation.

Suggested Comments and Order of Presentation

(c) Carry the ends around the ankles and tie them in front and between the ankles.

(d) Place a pillow or rolled up blanket under the knees.

(e) Place the second cravat bandage underneath the padding and bring the ends up over the thighs near the knees and tie them securely.

(2) This position may cause the protrusion to slip back into place.

(3) If the swelling remains, place a cold appliance over the site.

(4) *Do not force the protrusion back*. This can cause further injury to the underlying organs.

(5) If it is necessary to transport the patient, keep him in this position.

(6) All patients suffering from hernias should receive medical attention as soon as possible.

V. **Foreign Bodies**

A. The body has a number of natural openings – at the eyes, ears, nose and mouth – through which foreign objects may enter.

B. These foreign bodies can cause discomfort or pain, and may lead to infection if not treated promptly.

C. If a foreign body enters the air passage, there is a danger that the supply of oxygen will be cut off.

D. Treatment depends on the location of the object.

1. Foreign Bodies in the Eye

a. Dirt, sand, cinders, pieces of coal, or metal may be blown or driven into the eyes. They may remain on the surface, or they may be embedded in the eye.

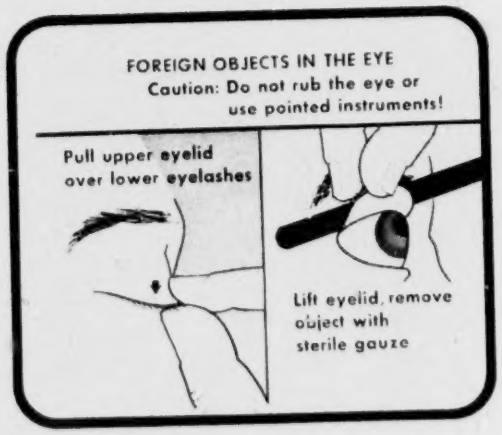
b. In some cases, these objects may be removed by a natural increase in the flow of tears around the eye.

c. When this fails, it is better to take the patient to a doctor than to attempt to remove the object.

d. When medical help is not available, first aid treatment should be given with extreme care.

[Use visual here.]

(1) Removing a foreign body lodged under the upper eyelid calls for drawing a lid gently down over the lashes of the lower lid. As the upper lid



Visual No. 45
"Foreign Objects in the Eyes"

Instructor's Notes

Suggested Comments and Order of Presentation

returns to its normal position, the lashes will help remove the object with their wiping action.

(2) Another method calls for exposing the undersurface of the lid and wiping it carefully with a piece of sterile gauze.

(a) Grasp the eye lashes between the thumb and forefinger, or cotton swab, match or pencil.

(b) Gently lift the lid and remove the particle with the corner of a piece of folded sterile gauze.

(3) Particles may be removed from the lower lid using the same techniques.

e. If a particle is embedded in the eyeball, *do not disturb it*.

(1) Place a sterile bandage compress over the eye and send the patient to a doctor.

f. Do not rub the eye when a foreign body is present. Also, keep the patient from rubbing his eye.

g. Do not use a pointed object (toothpick, knife point or matchstick) to remove a foreign body from the eye.

h. Wearing the proper eye protection will prevent the entry of foreign bodies.

2. Foreign Bodies in the Ear

a. Small insects, pieces of rock or other materials may enter the ear causing discomfort and the danger of infection.

(1) Children sometimes put objects in their ears – buttons, kernels of corn, seeds and so forth.

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(2) In some instances, the moisture in the ear is absorbed by these objects, causing them to swell and making removal difficult.

b. When treating a patient with an object in his ear, *never* use pins, hairpins or pieces of wire. These items may force the object further into the ear and cause it to damage the lining of the ear or eardrum.

(1) Turn the patient's head so the affected ear is down and ask him to shake his head up and down.

(2) Insects entering the ear can be removed by placing a few drops of sweet oil or vegetable oil warmed to body temperature into the ear.

(a) After a few minutes, turn the patient's ear down and allow the oil to run out. This may wash the insect out.

(b) If the object cannot be removed easily, seek medical help promptly.

3. Foreign Bodies in the Nose

a. Foreign bodies in the nose can usually be removed without difficulty.

b. Sneezing will dislodge foreign bodies from the nose. This can be induced by snuff or pepper, or by tickling the opposite nostril.

c. Do not allow the patient to blow his nose violently, or to blow it with one nostril held shut.

4. Foreign Bodies in the Throat or Windpipe

a. Pins, coins, fishbones, false teeth or particles of food sometimes become lodged in the throat or windpipe.

Instructor's Notes

Visual No. 46
"Foreign Objects in the Throat"

Suggested Comments and Order of Presentation

b. These obstructions can partially or completely shut off the supply of air to the lungs.

c. When this happens, the patient's face becomes livid, he gasps for breath and may cough violently.

d. In all cases, an attempt should be made at once to remove the obstruction.

[Use visual here.]

(1) Have patient open his mouth wide. Hold the tongue down and look into the throat.

(2) If the object can be seen, pass the forefinger into the throat alongside the tongue and try to withdraw the object.

(3) Be careful not to push the object farther back into the throat.

e. If the object cannot be seen or felt with the finger, it may be dislodged by slapping the patient on the back between the shoulder blades.

(1) One effective way to dislodge an object is to lower the patient's head by bending him down or leaning him over a chair. Then slap him sharply between the shoulder blades. In this position, gravity may help to remove the object.

(2) If the patient is a child, hold him up by the legs and slap him on the back between the shoulder blades.

f. Medical help should be summoned immediately if these measures fail to remove the object.

g. Give artificial respiration if breathing is affected seriously by the obstruction.

5. Foreign Bodies in the Stomach

a. Pins, coins, nails and other objects are sometimes swallowed accidently.

b. They may be lodged in the throat or in the esophagus leading to the stomach and cause difficulty in swallowing.

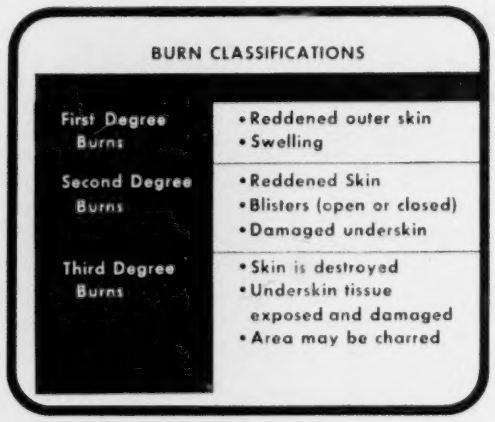
c. In this situation, the most effective first aid treatment is no treatment at all.

(1) Do not attempt to dislodge the foreign body.

(2) Do not give anything to induce vomiting or bowel movement.

d. Take the patient to a doctor immediately.

Instructor's Notes



Visual No. 47
"Burn Classifications"

Use a *revelation shield* when presenting this visual, exposing the "Degrees" one at a time. You may work directly from the visual which includes essentially the same information that is provided in the outline.

Suggested Comments and Order of Presentation

VI. Burns and Scalds

A. Burns are injuries to the skin caused by dry heat such as fire, electricity, friction or heated objects.

B. Scalds result from contact with wet heat – hot solutions, steam, and chemicals such as acids or strong alkalis.

[Use visual here.]

C. Burns are classified by the degree of injury to the body tissues:

1. *First degree* burns are the least serious. They involve only the outer skin which is reddened, accompanied by slight swelling.

2. *Second degree* burns affect the under skin and result in blisters.

3. *Third degree* burns are burns in which the skin is destroyed and the tissues underneath are damaged. In severe cases, muscles, nerves, and blood vessels may be destroyed and the whole area charred.

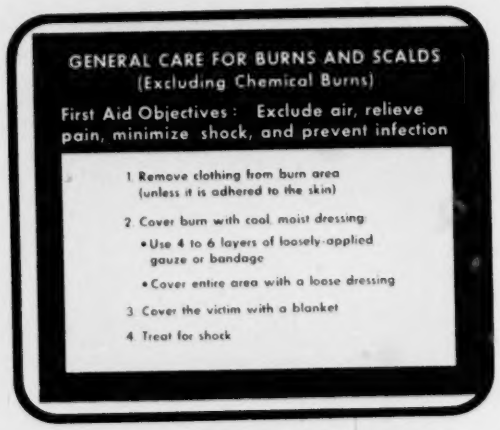
D. The seriousness of a burn or scald depends on the size of the area affected, as well as the depth of the damage to tissues.

1. When two-thirds of the body is covered by second degree burns, there is the danger that the patient will die.

2. A much smaller area affected by third degree burns can cause death.

E. Physical shock is severe when burns are extensive and is frequently the cause of death in the first few hours

Instructor's Notes



Visual No. 48

"General Care for Burns and Scalds"

Suggested Comments and Order of Presentation

[Use visual here.]

F. First aid treatment for burns and scalds (excluding chemical burns) is aimed at excluding air from the affected area, relieving pain, minimizing shock and preventing infection.

1. Remove all clothing from the injured area unless it is adhered to the skin. If so, cut away the clothing around it.

2. Cover burns or scalds as soon as possible with a clean, cold, moist dressing (gauze or bandage material).

   a. Use four to six layers of loosely-applied gauze.

   b. The dressings should be moistened in a solution of ice cold water and baking soda (three tablespoons to a quart of water).

   c. Cover the entire area of the burn with the dressing.

3. Keep the patient covered, except for the injured part, since there will be a tendency to chill.

4. Treat the patient for shock. It can be severe in the case of burns.

5. If the injury is to a limb, immerse it in a container of ice water if possible.

6. If ice is available, ice packs may be placed over the area of the burn after it has been dressed.

7. No grease or oils should be applied. These make it necessary to clean the affected area with solvents before medical treatment can begin.

a. Water soluble preparations may be used provided they have been approved by a doctor.

G. When applying dressings to a burn or scald, you should use great care; these wounds are easily infected.

1. Do not break blisters in the burned area.

2. Never permit burned surfaces to come in contact with each other. Be especially careful when working with the fingers and toes, the undersurface of the arm where it might contact the chest, and the folds of flesh in the groin.

3. Always apply several layers of dressing soaked in the water and soda solution mentioned earlier.

4. Apply dressing loosely over the entire area of the burn. The bandage and cover dressing should be loose enough to prevent pressure on the burned surfaces.

5. Check the dressing frequently. When swelling takes place, the dressing may become too tight.

H. Severely burned patients may be given fluids. But remember that fluids can cause nausea and vomiting when the patient is suffering from shock.

1. If medical help will be available within 15 to 20 minutes, give fluids only to quench the patient's thirst.

2. If there is a possibility that medical help will be delayed, give the patient a half-glass of the water, salt and soda solution described in the section dealing with physical shock.

Instructor's Notes

Visual No. 49
"General Care for Chemical Burns"

Suggested Comments and Order of Presentation

a. This solution is prepared with ½ level teaspoon of table salt and ½ level teaspoon of baking soda per quart of water.

3. If the patient is to be moved to a hospital where an anesthetic may be used, avoid giving him fluids by mouth.

[Use visual here.]

I. *Chemical burns* should first be washed thoroughly with clean water to dilute the chemical, then treated as any other burn.

1. Flush the burn with a continuous stream of water from a spigot or container for five minutes or more.

2. After washing the burn, apply a cool, moist burn dressing.

J. Chemical burns to the eye require special attention.

1. The eyes are sensitive to a variety of substances that do not affect the skin. They may be burned by lime, cement, caustic soda, acids or alkalis.

2. When any of these chemicals get into a person's eyes, the eyes should be flushed with clean water.

a. Place the patient in a lying position and turn his head to the side.

b. Lift the eyelid and pour clean water into the inner corner of the eye from a pitcher or similar container.

c. Use plenty of water, but make certain that it is flowing across the eye.

d. Do not use a neutralizing solution of any kind in the eye.

e. Apply a dressing as for any injury to the eye.

Instructor's Notes

Suggested Comments and Order of Presentation

f. All chemical burns to the eyes should receive medical attention from an eye specialist as soon as possible.

K. The dressings for burns in different regions of the body require special handling. In the next few minutes, we'll deal with the procedures for dressing burns and scalds in specific parts of the body.

1. Burns of the Face, Head or Neck

a. The burned area should be covered with a clean, cool, moist protective dressing of gauze or bandage material. The bandage should be moistened in a solution of water and baking soda (three tablespoons of baking soda per quart of water).

b. Water soluble preparations may be applied to the burn provided they have been approved by a doctor.

c. The dressing should be applied in several layers, with care taken to separate the burned surfaces, as between the ears and head.

d. Cover the gauze with two triangular bandages and a cravat bandage.

[Use visual here.]

(1) Place the base of the first triangular bandage over the top of the head, a little back of the center.

(a) The apex should be dropped over the face and under the chin.

(b) Cross the two ends in back of the head below the bony prominence. Pass them around the neck and tie loosely over the apex under the chin.

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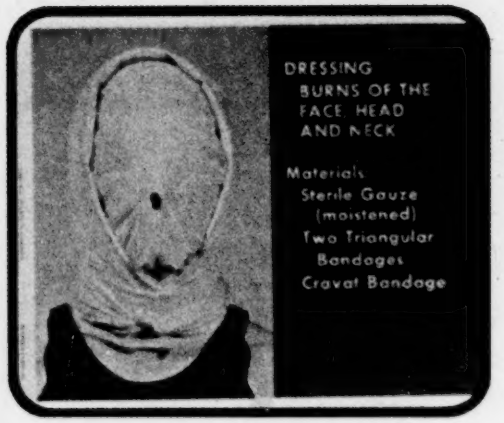

Visual No. 50
"Dressing: Burns of the Face, Head and Neck"

Instructor's Notes	Suggested Comments and Order of Presentation

(2) Place the center of the base of the second triangular bandage over the top of the head, but somewhat in front of the center.

(a) The apex should be dropped over the back of the head, down over the back of the neck.

(b) Carry the two ends under the chin, cross, pass them around the neck and tie loosely at the back over the apex.

(3) Center a cravat bandage under the chin.

(a) Pass the bandage around the neck, crossing at the back of the neck.

(b) Tie loosely in front.

e. If dressings are to be applied to the chest and back, leave the apex of the head and face bandages extending down the chest and back, placing them under the chest and back dressings.

f. If the head and face only are burned, fold the apexes up and tuck them under the cravat bandage round neck.

g. Cut a hole in the first triangular bandage over the patient's nose. It should be large enough for him to breathe freely.

h. If the neck only is burned, dress it by applying gauze or a burn dressing which has been moistened in a cold water and baking soda solution.

2. Burns of the Chest

a. Remove clothing from the burned surface and apply a cool, moist dressing

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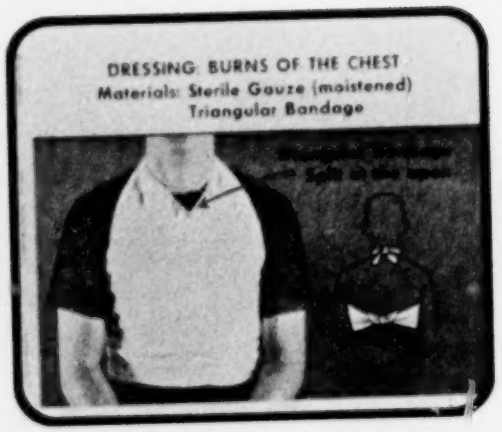
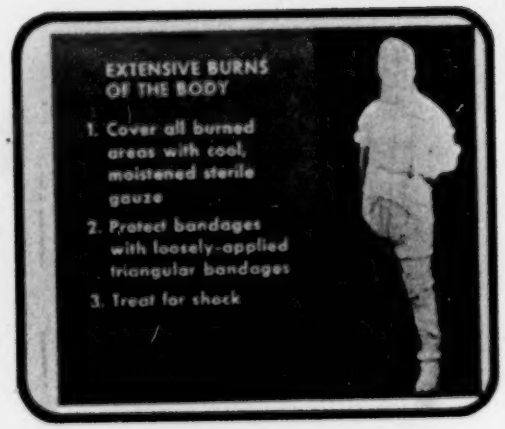
Instructor's Notes



Visual No. 51
"Dressing: Burns of the Chest"



Visual No. 52
"Extensive Burns of the Body"

Suggested Comments and Order of Presentation

of sterile gauze or bandage material. The dressing should be dipped in a cold solution of baking soda and water.

b. Apply a triangular bandage over the gauze.

[Use visual here.]

(1) Split the apex of the triangular bandage about 10 inches or just far enough that the ends will reach around the neck.

(2) Place the base of the triangular bandage across the abdomen below the chest. Pass the ends around the body and tie them loosely in back.

(3) Bring the split ends of the apex up to the neck and pass them around the neck, tying them loosely in back.

c. Dress small burns of the chest with a loosely applied cravat or triangular bandage as for a wound or bleeding of the chest.

3. Burns of the Back

a. Use the same kind of dressing for burns of the back as used for burns on the chest. Simply reverse the position of the bandages.

4. Extensive Burns on the Body

a. Use the same fundamental steps for covering large burned areas of the body.

[Use visual here.]

(1) Remove clothing from the burned area of the body.

Instructor's Notes

Suggested Comments and Order of Presentation

(2) Apply cool, moist dressings of gauze or bandage materials loosely over the burns.

(3) Apply outer dressings using triangular bandages and cravat bandages. Use the procedures discussed earlier for different parts of the body.

(4) Treat for severe shock and seek medical help immediately.

THE DISCUSSION OF OPEN AND CLOSED WOUNDS, BURNS AND SCALDS ENDS HERE. On the next few pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of the techniques presented in this portion of the course.

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OPEN AND CLOSED WOUNDS, BURNS AND SCALDS

The Fourth Fundamental of First Aid

The following questions will help you evaluate the student's retention of the principles and techniques presented in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions; each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative answers given for each question. Only one of the alternatives is correct.

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I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer it *true*. If you feel it is inaccurate, answer *false* and explain why you believe it to be wrong.

Question	*Correct Answer*
1. Incisions are wounds produced by sharp cutting objects.	True
2. The person with first aid training *should* remove embedded instruments from a puncture wound.	False (Should not)
3. One way to keep a wound clean is not to touch it directly with your hands.	True
4. A person who has had a nose bleed *should* blow his nose to remove the blood clots.	False (Should not)
5. If there is severe bleeding from a wound in the armpit, place a hard, covered object over a sterile pad and push it well up into the armpit before you apply the cravat dressing	True
6. The main purpose of a cravat bandage is to protect the sterile dressing from germs.	True
7. If there is severe venous bleeding from a thigh wound, apply a constricting bandage *over* the wound.	False (Over uninjured tissue below the wound)

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Question	*Correct Answer*
8. Varicose veins are veins that have become distended	True
9. Strains result from over stretching of muscles and tendons.	True
10. If a particle is embedded in the eyeball, remove it with a piece of sterile gauze.	False (Do not remove it)
11. In removing foreign bodies from the eye, *never* use a sharp object.	True
12. One of the functions of the skin is to protect the body from infection.	True

II. Completion Question

Complete the following statements by adding the correct word or words.

Question	*Correct Answer*
1. The edges of a laceration wound are _____.	Bruised and torn
2. When there is an open wound, it means there is a break in the _____.	Skin
3. Sterile dressing is a dressing that is free from all _____.	Bacteria or germs
4. Extensive wounds of the hands should be dressed with sterile gauze or a sterile bandage compress and covered with a _____.	Triangular bandage
5. When applying a sterile bandage compress, the pad should be placed directly over the _____.	Wound
6. When a limb is torn from the body at a joint, there is excessive bleeding from large _____.	Blood vessels or arteries
7. With one type of wound, a tourniquet should be applied and left in place until it is removed by a doctor who is equipped to replace blood. That wound occurs when an arm or leg had been _____.	Amputated

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Question	*Correct Answer*
8. If several fingers are injured, wrap them_____.	Separately
9. If the patient has a deep gaping abdominal wound, the protruding organs should be covered with a _____.	Moist dressing
10. Never force a hernia or rupture back into a cavity because it might cause injury to underlying_____.	Organs
11. In caring for a patient who has second degree burns, never break the_____.	Blisters
12. If a limb is burned, immerse the part in_____.	Cold water

III. Multiple Choice

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three alternative answers and select the one you believe is most accurate.

Question *Correct Answer*

1. Abrasions are wounds that . . .
   a. Bleed freely.
   b. Are deep.
   c. Are caused by rubbing or scraping the surface. Answer: c.

2. Puncture wounds are . . .
   a. Produced by a sharp cutting object.
   b. Are usually narrow and deep. Answer: b.
   c. Not easily infected.

3. In general care for an open wound, the first thing you should do is . . .
   a. Stop the bleeding
   b. Brush away dirt from the wound. Answer: a.
   c. Wash the wound with water.

4. When the patient has a deep chest wound, there is danger of . . .
   a. Bleeding.
   b. The lung collapsing. Answer: b.
   c. Fractured ribs.

Question	*Correct Answer*
5. A constricting bandage should be applied . . . a. Directly over the wound. b. Always below the wound. c. Over uninjured tissue above or below and as near the wound as possible.	Answer: c.
6. Closed wounds are injuries that . . . a. Bleed freely. b. Occur without a break in the skin. c. Are caused by sharp instruments.	Answer: b.
7. When blood vessels are ruptured under the skin causing swelling and discoloration, the wound is known as a . . . a. Rupture or hernia. b. Bruise. c. Strain.	Answer: b.
8. Sprains are most frequently caused by . . . a. A blow from a heavy, blunt object. b. Falling. c. Twisting or wrenching a joint.	Answer: c.
9. When a foreign body is lodged in the throat, the person with first aid training would . . . a. Give artificial respiration first. b. Give him something to drink. c. Slap him sharply on the back between the shoulder blades.	Answer: c.

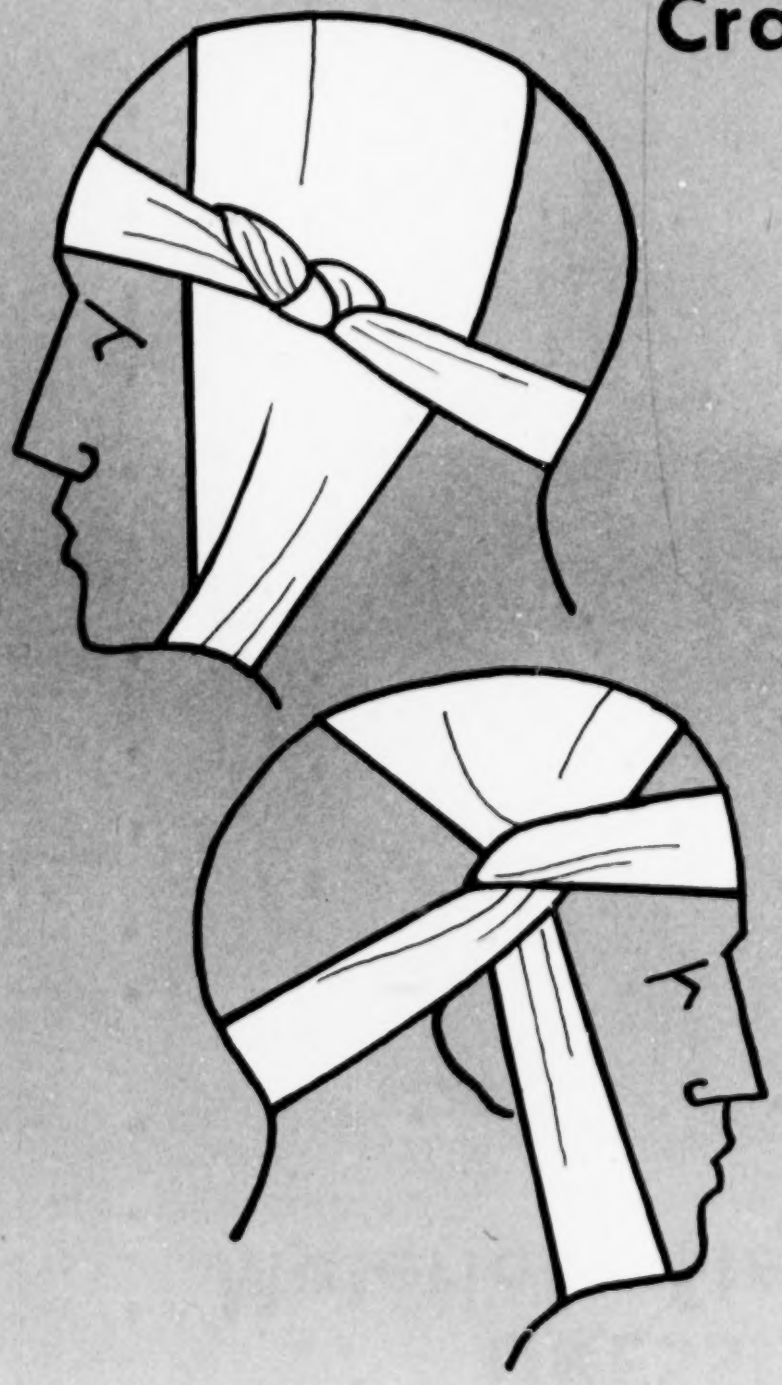
Question	*Correct Answer*
10. Scalds result from . . . a. Fire. b. Electricity. c. Steam vapors or hot solutions.	Answer: c.
11. If the skin is blistered, the burn is considered a . . . a. First degree burn. b. Second degree burn. c. Third degree burn.	Answer: b.
12. When dressing a burn, the bandage should be applied loosely after it has been dipped in . . . a. Grease or oil. b. A water soluble preparation. c. A cold water and baking soda solution.	Answer: c.

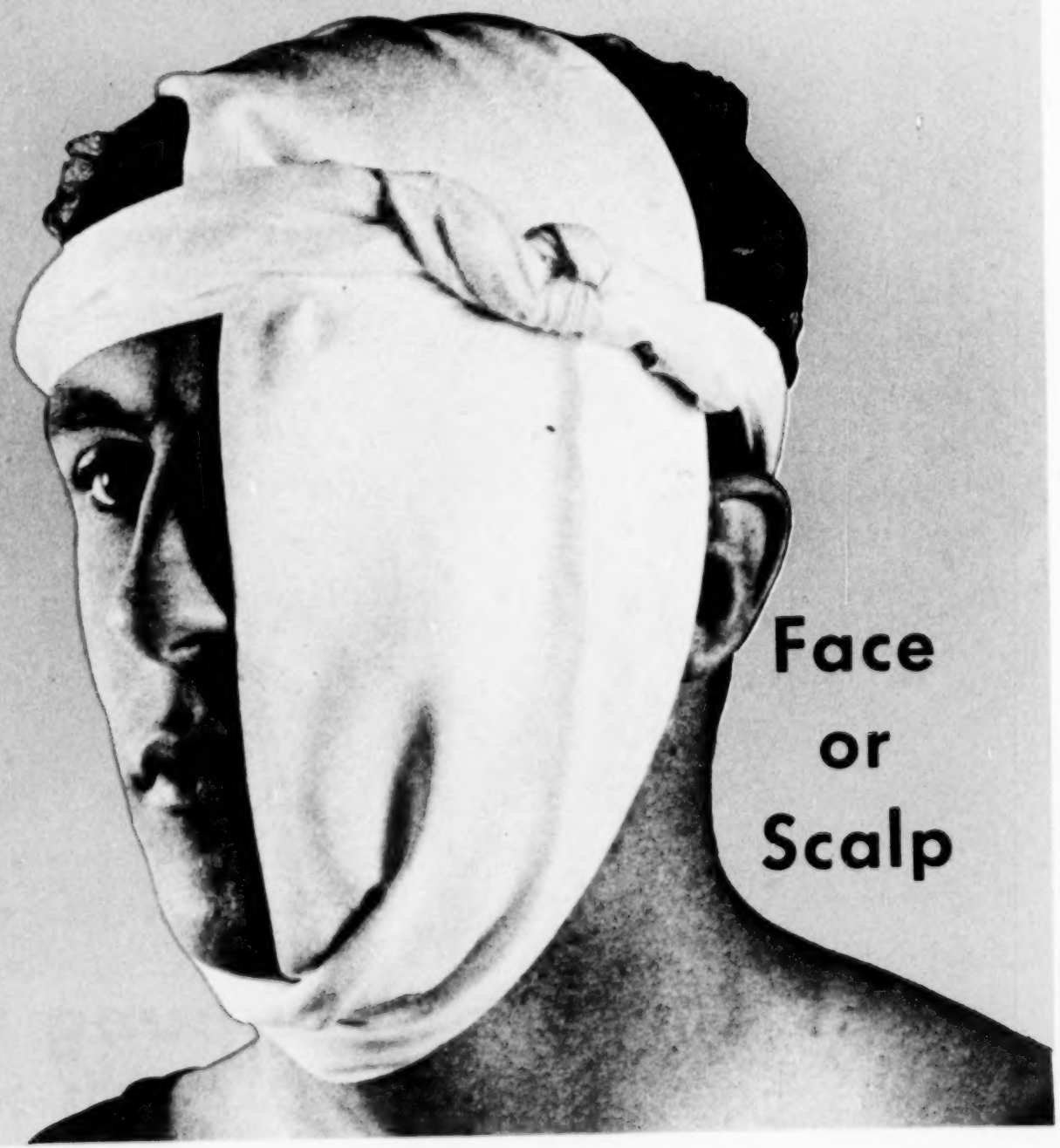
TYPES OF OPEN WOUNDS

	Cause	Characteristics	Special Concerns
Abrasions	• Rubbing or scraping	• Involves surface areas of skin • Little bleeding	• Danger of infection
Incisions	• Sharp instruments or objects	• "Clean" edges • Can involve cut arteries or veins	• Severe bleeding
Lacerations	• Blunt, heavy instruments or objects	• Torn, bruised tissue • Can involve cut arteries or veins	• Severe bleeding • Foreign materials in wound (danger of infection)
Punctures	• Pointed instruments or objects	• Narrow, deep wounds • Can involve cut arteries or veins	• Embedded objects • Danger of infection

DRESSING: SCALP, TEMPLE, EAR OR FACE

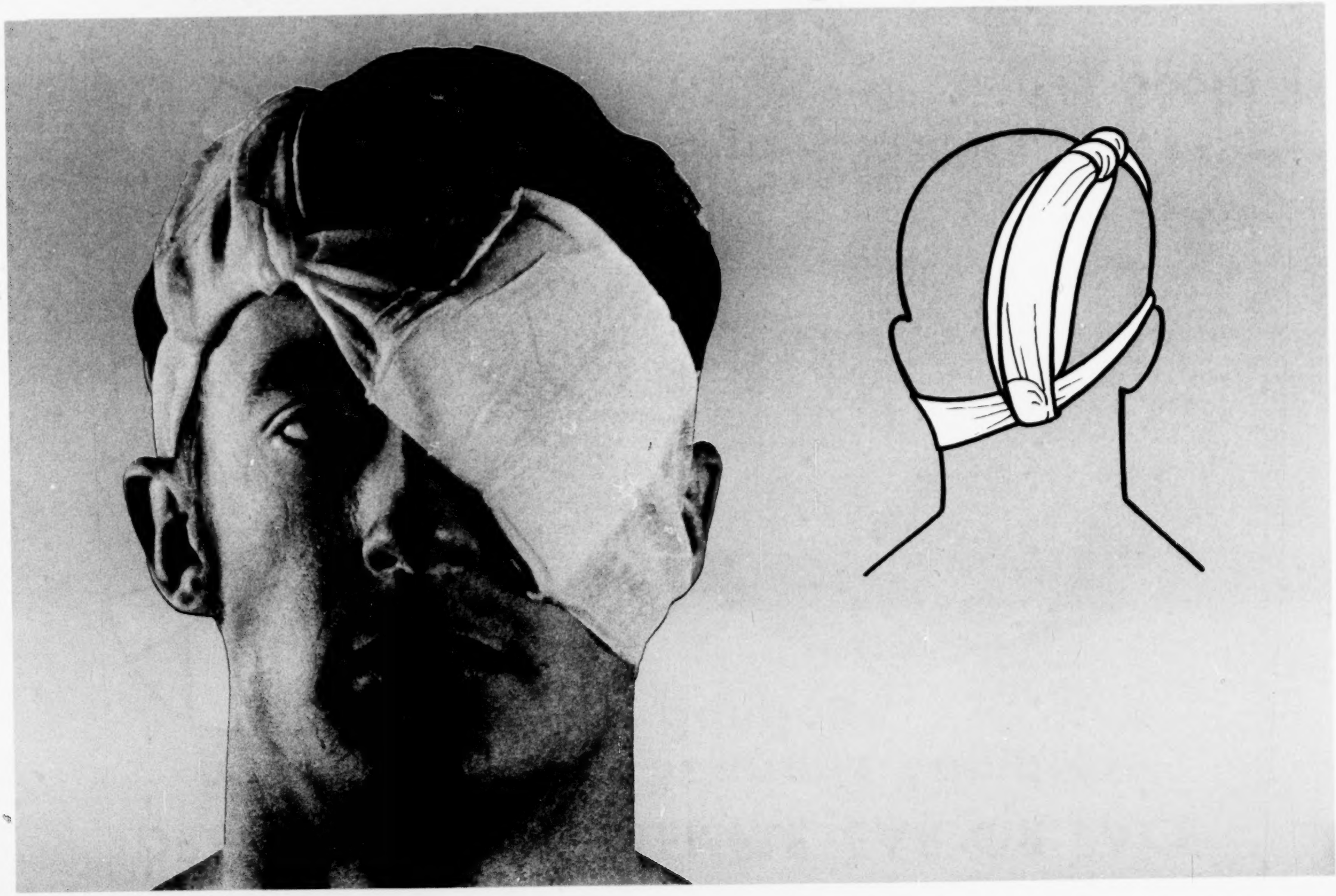
Materials: Sterile Bandage Compress
Cravat Bandage



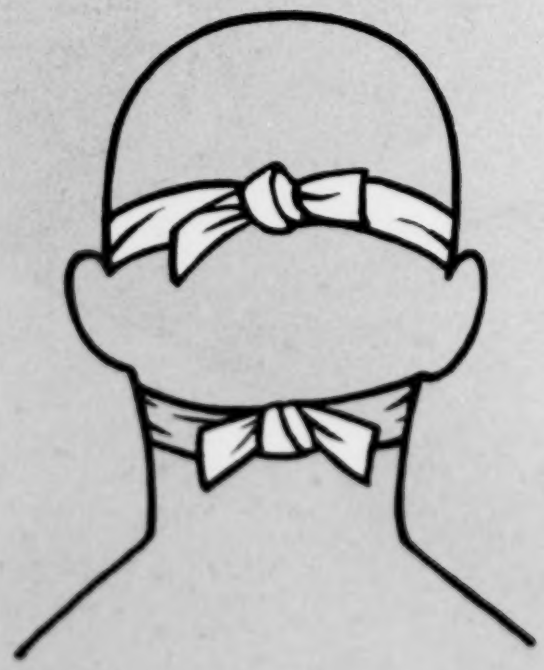


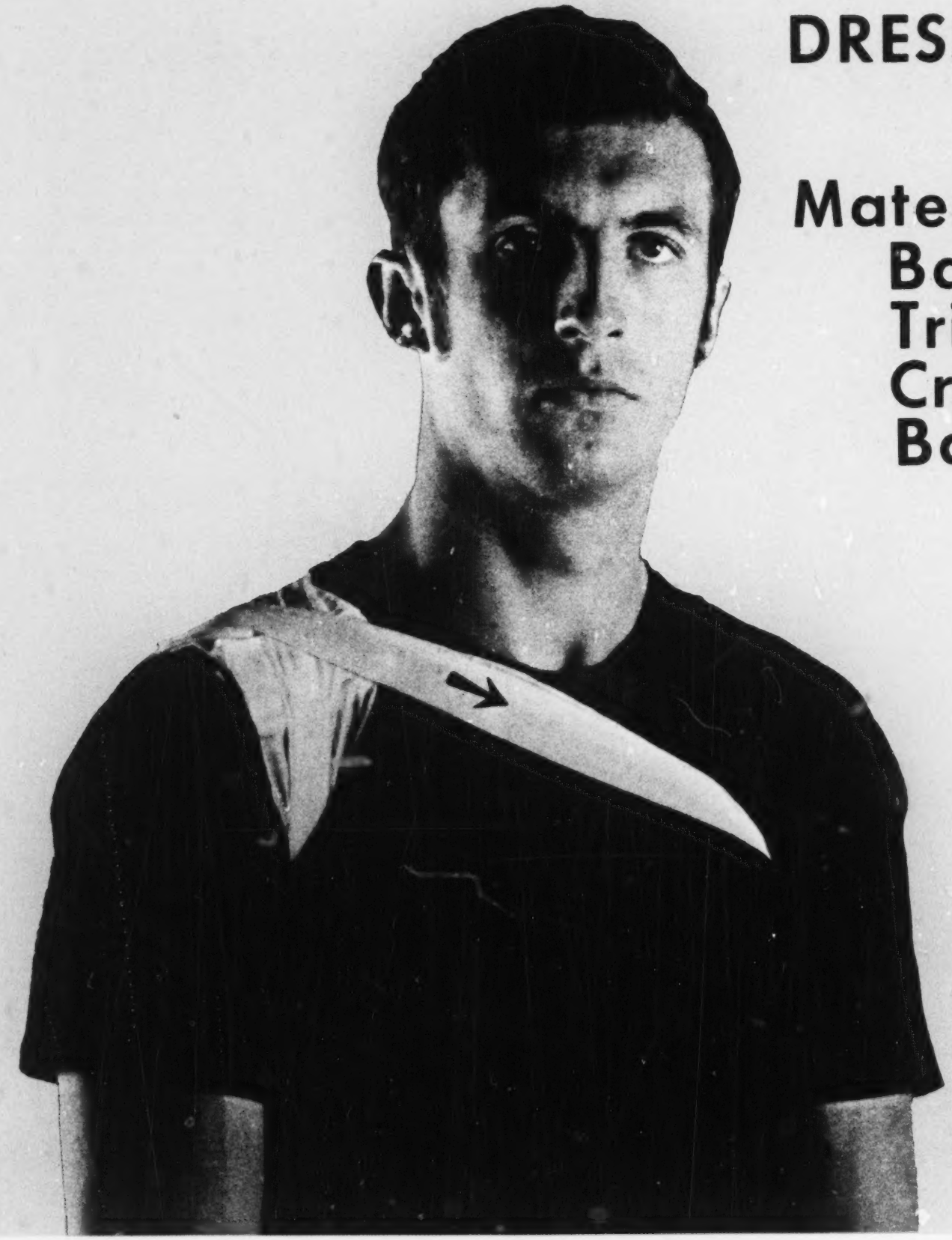
Face or Scalp

DRESSING: INJURED EYE
Materials: Sterile Bandage Compress



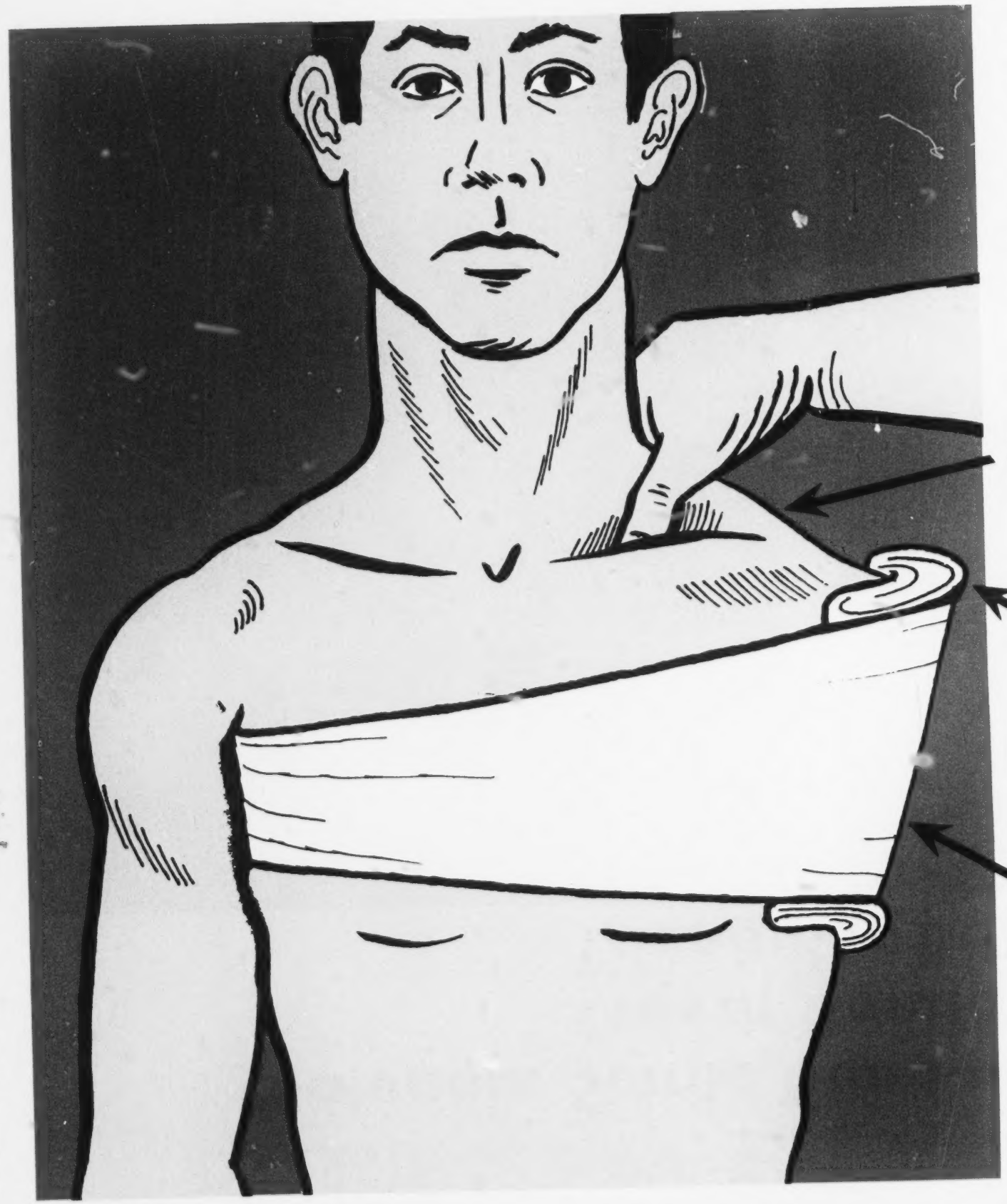
BANDAGE: WOUNDS OF THE NOSE
Materials: Sterile Bandage Compress





DRESSING: SHOULDER WOUNDS

Materials: Sterile
Bandage Compress
Triangular Bandage
Cravat
Bandage



DRESSING: DISMEMBERED ARM

Subclavian Pressure Point

Materials:

Sterile Gauze

Cravat Bandage

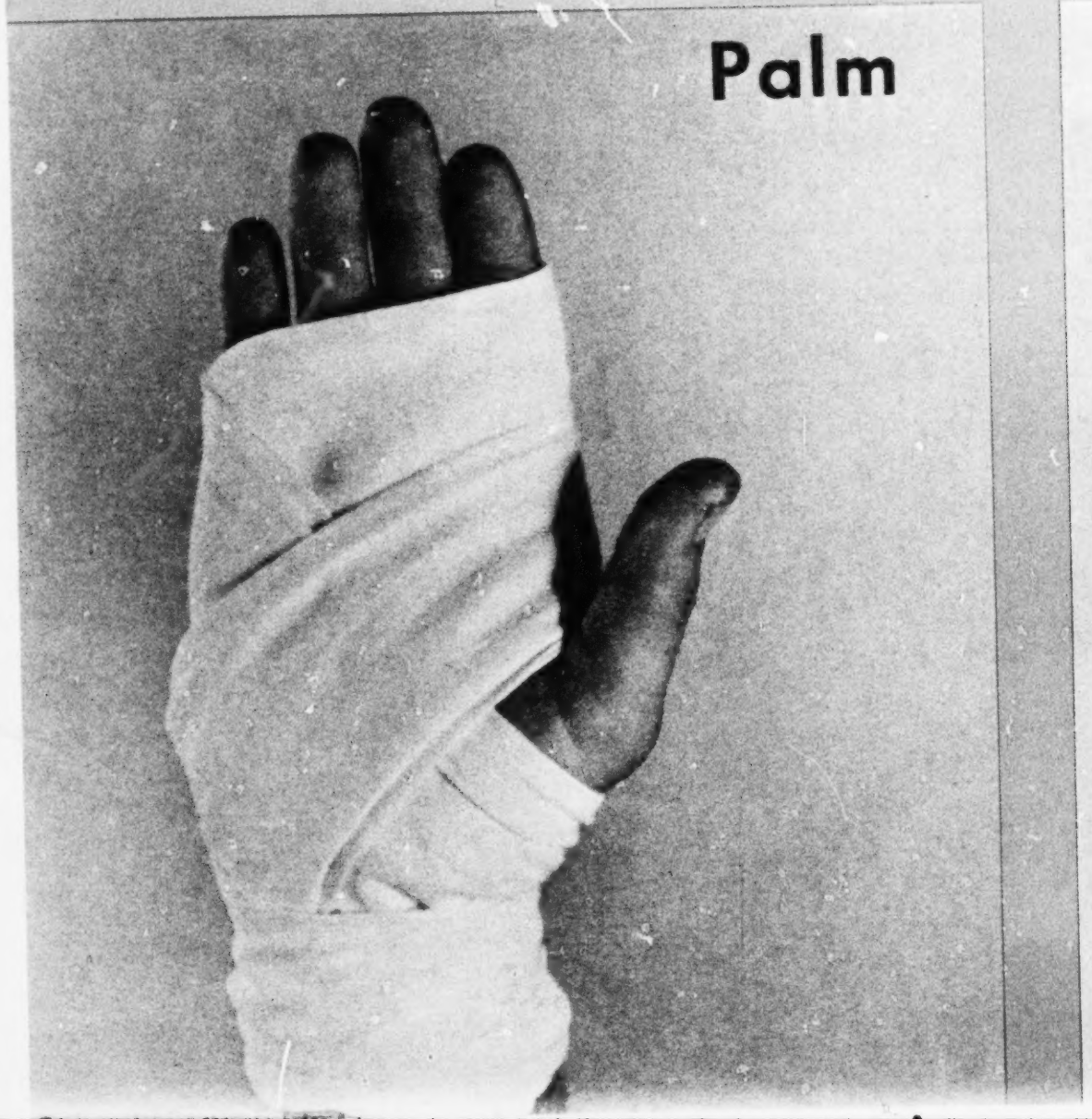
DRESSING: ARM, FOREARM AND ELBOW

Materials: Sterile Bandage Compress
Cravat Bandage
Triangular Bandage

BANDAGE: WOUNDS OF THE HAND

Materials: Sterile Bandage Compress
Cravat Bandage
Triangular Bandage

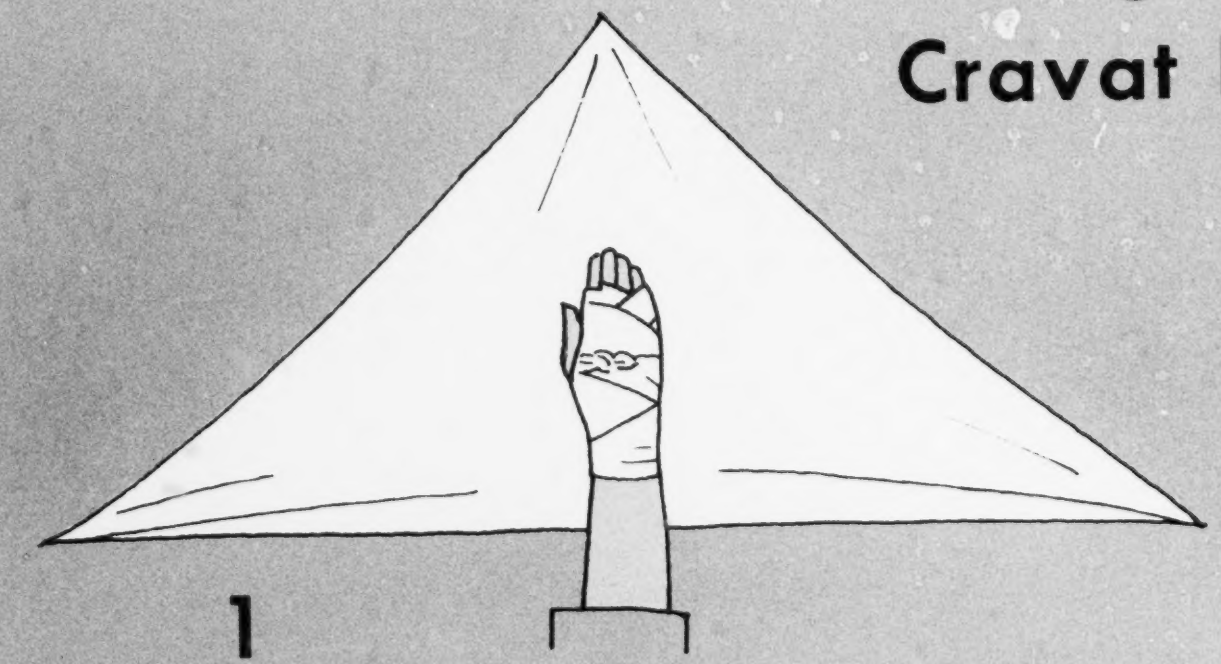
Palm

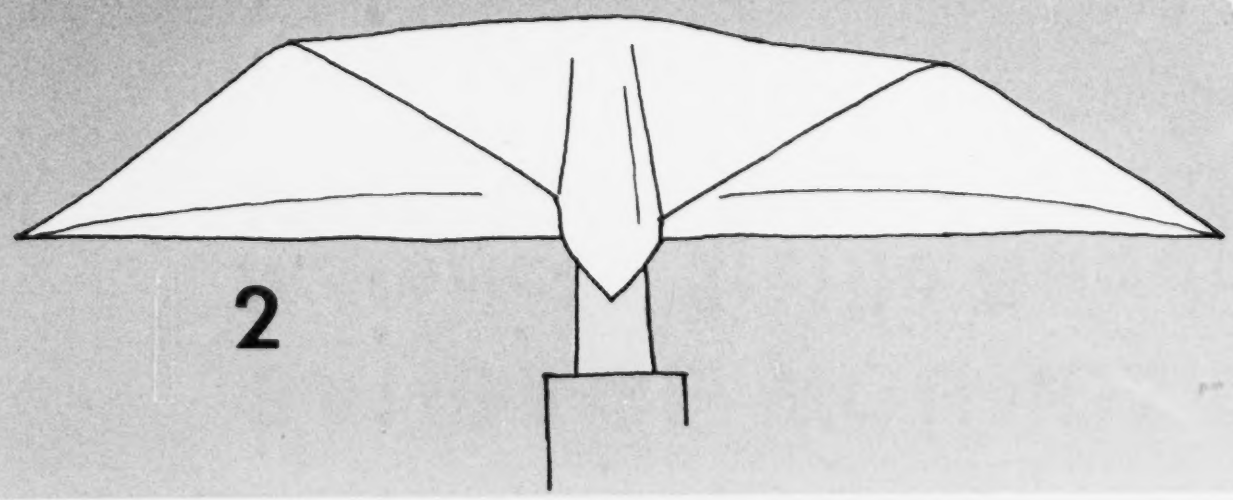


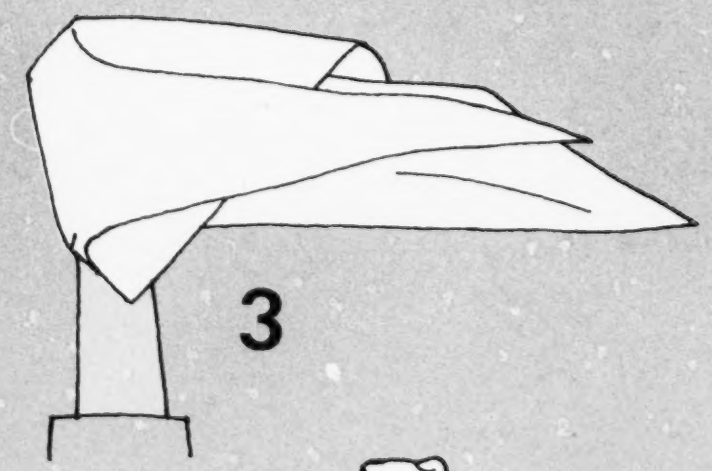
Back

EXTENSIVE WOUNDS OF THE HAND

Materials: Sterile Bandage Compress
Triangular Bandage
Cravat Bandage

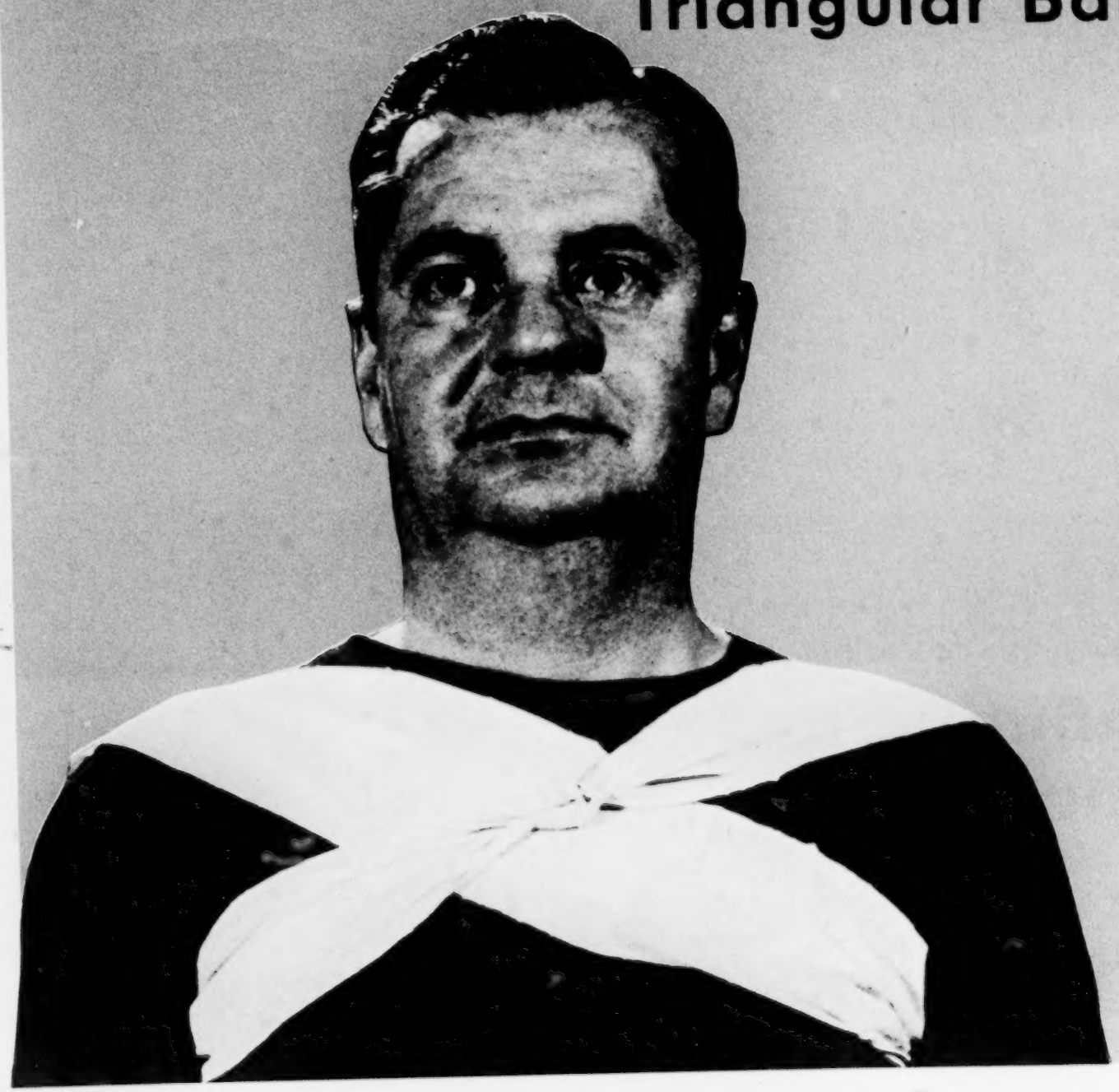






DRESSING: WOUNDS OF THE CHEST BETWEEN SHOULDERS

Materials: Sterile Bandage Compress
Triangular Bandage



Cover with triangular bandage

DRESSING: WOUNDS OF LOWER ABDOMEN OR BACK

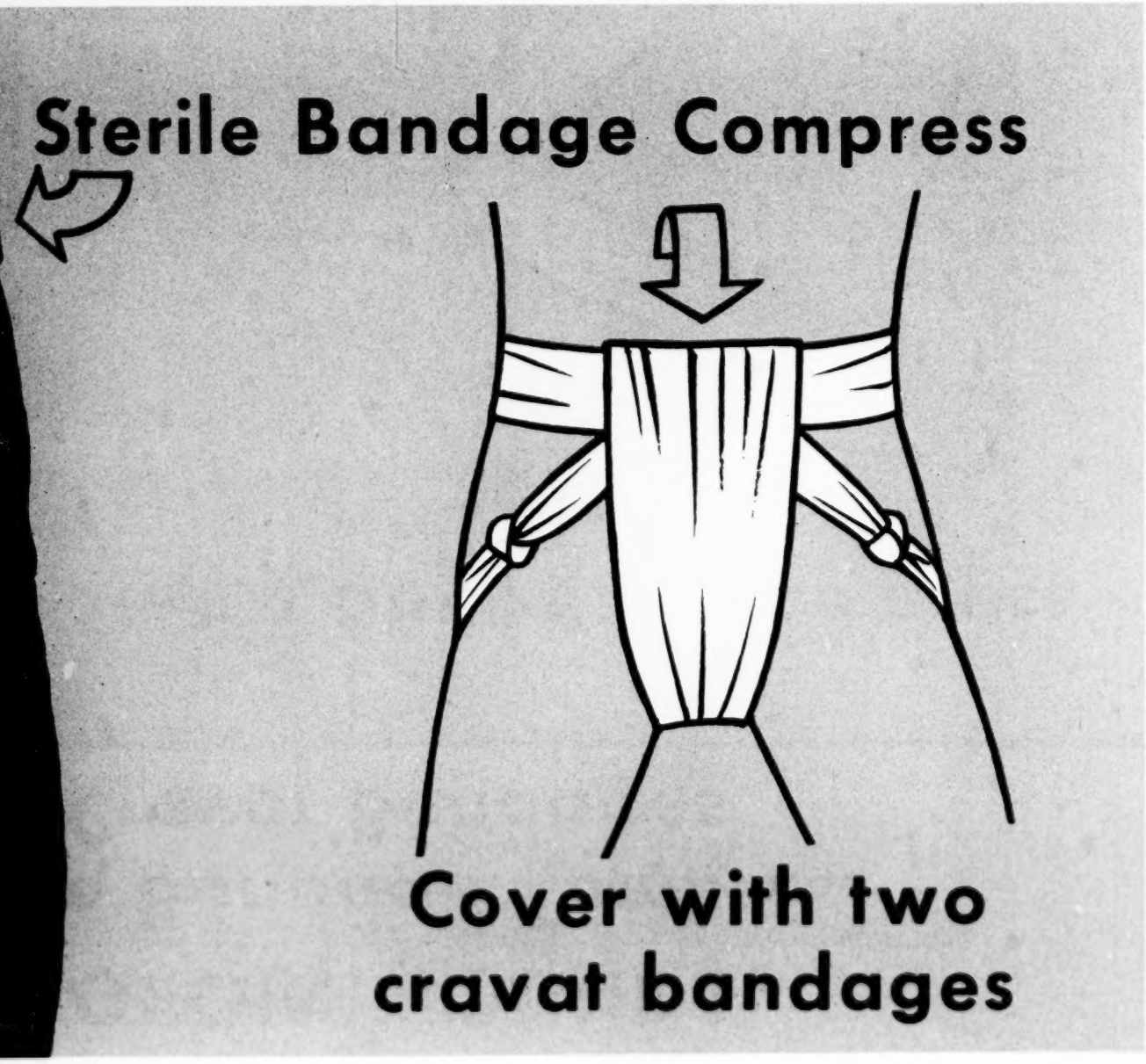
Materials: Sterile Bandage Compress
Two Triangular Bandages

DRESSING: GROIN WOUNDS

Materials: Sterile Bandage Compress
Two Cravat Bandages

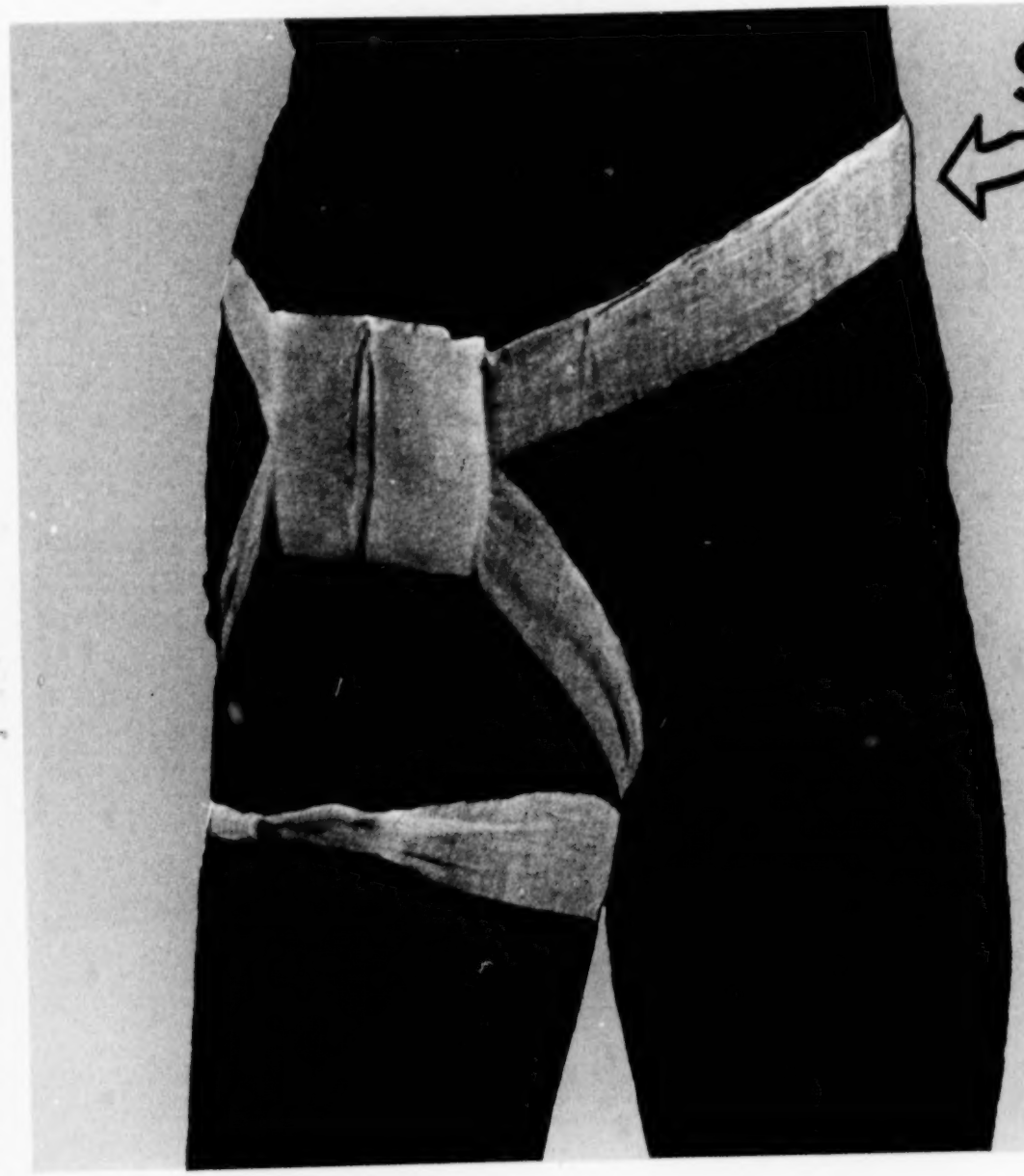
DRESSING: WOUNDS OF THE CROTCH

Materials: Sterile Bandage Compress
or Sterile Gauze
Two Cravat Bandages



DRESSING: WOUNDS OF THE HIP

Materials: Sterile Bandage Compress
Triangular Bandage
Cravat Bandage



Split the tails of a sterile bandage compress

Triangular Bandage and Cravat Bandage

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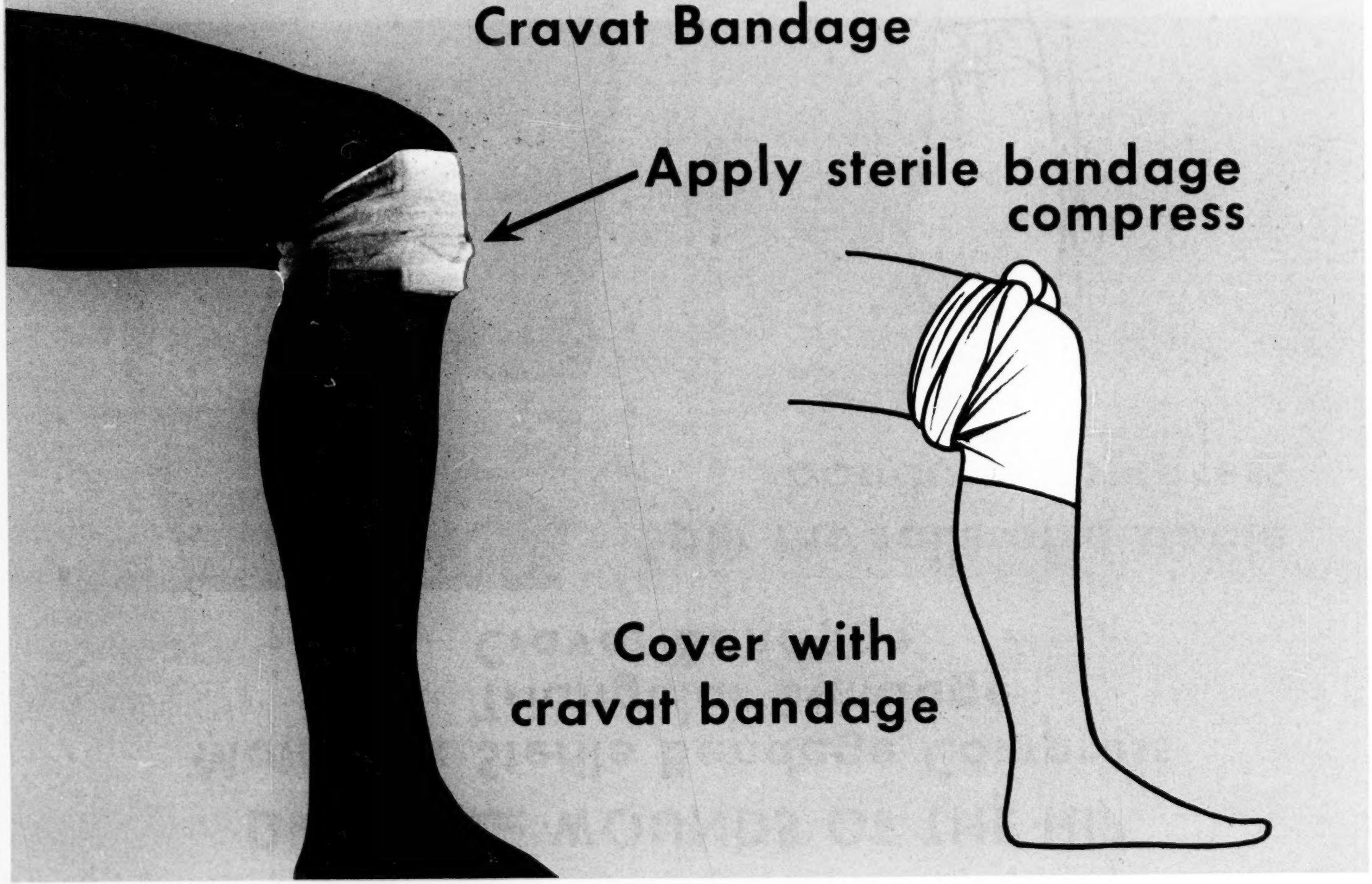
DRESSING: WOUNDS OF THE KNEE

Materials: Sterile Bandage Compress
Cravat Bandage



DRESSING: WOUNDS OF THE ANKLE AND FOOT

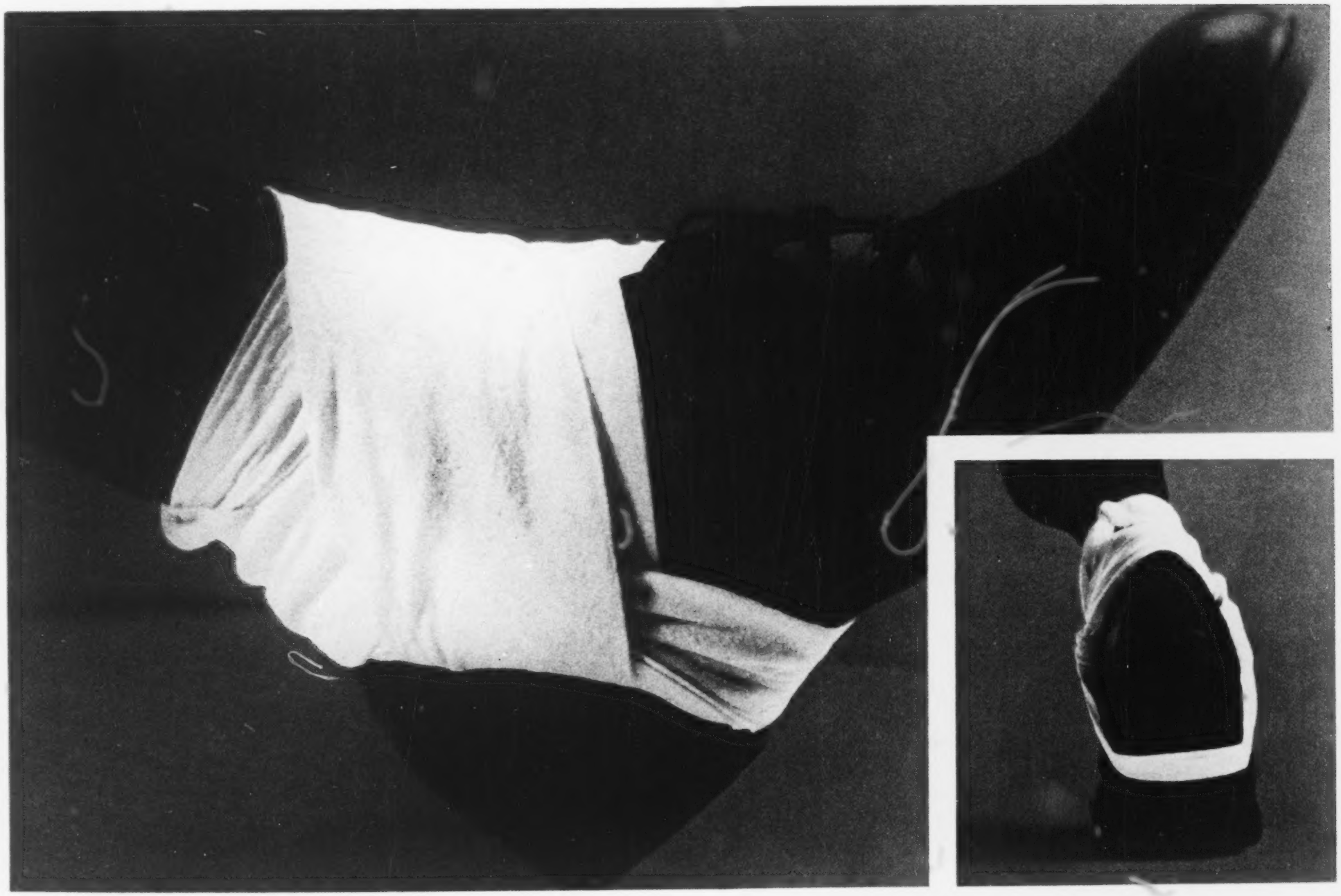
Materials: Sterile Bandage Compress
Cravat Bandage

Ankle Wounds

Foot Wounds

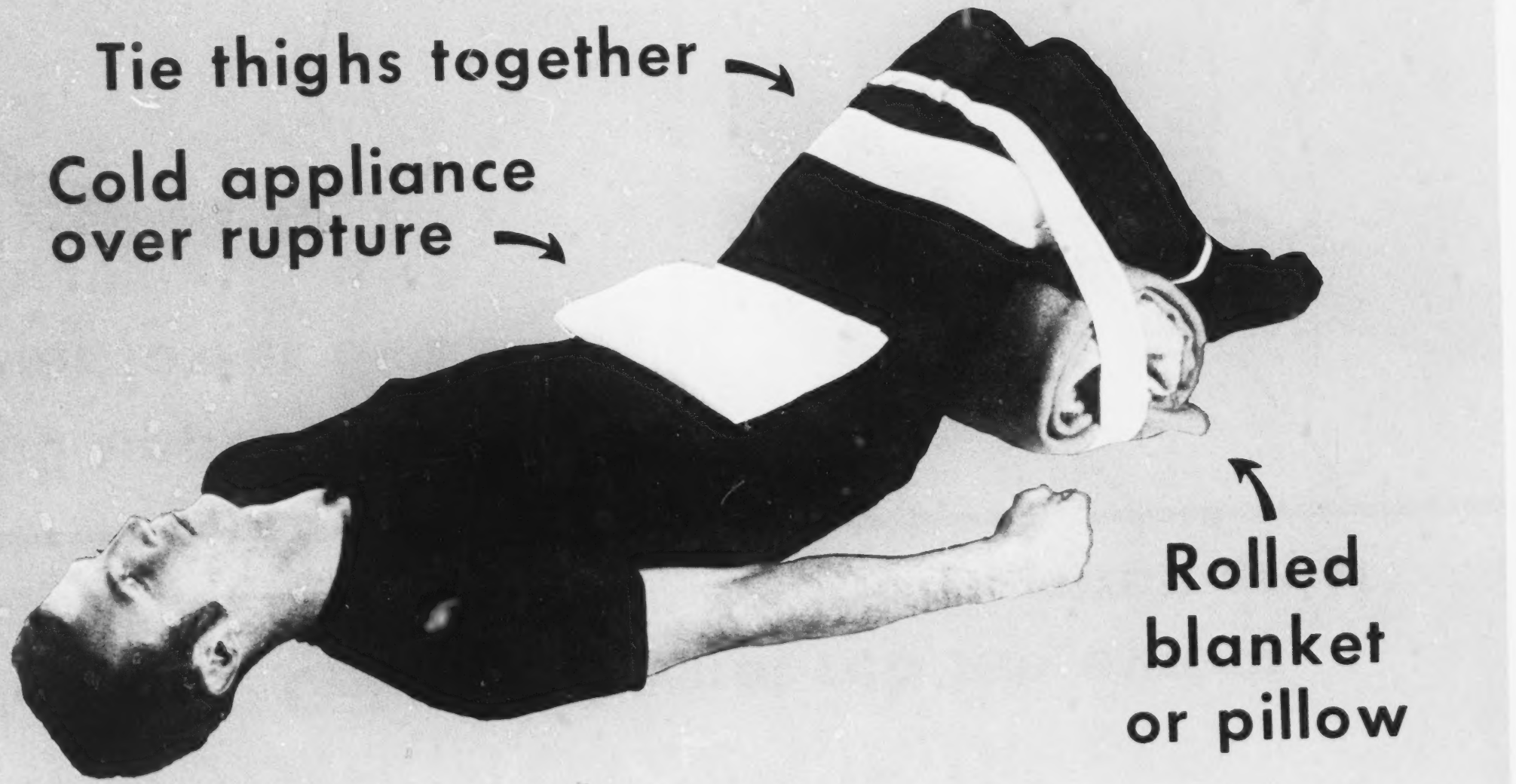
DRESSING: SPRAINED ANKLE

Materials: Cravat Bandage



TREATMENT: RUPTURE OR HERNIA

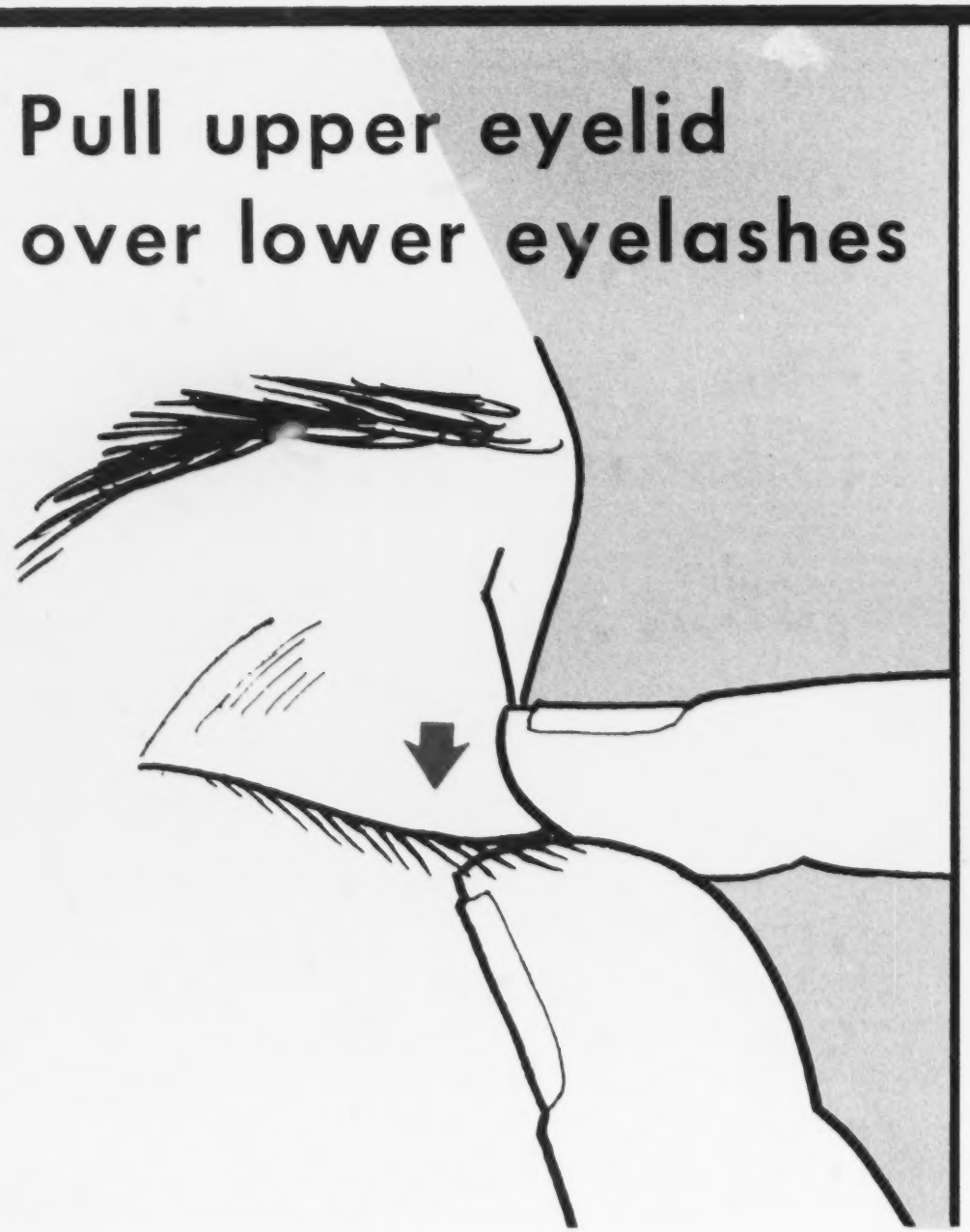
Materials: Two Cravat Bandages
Cold Appliance
Blanket or Pillow

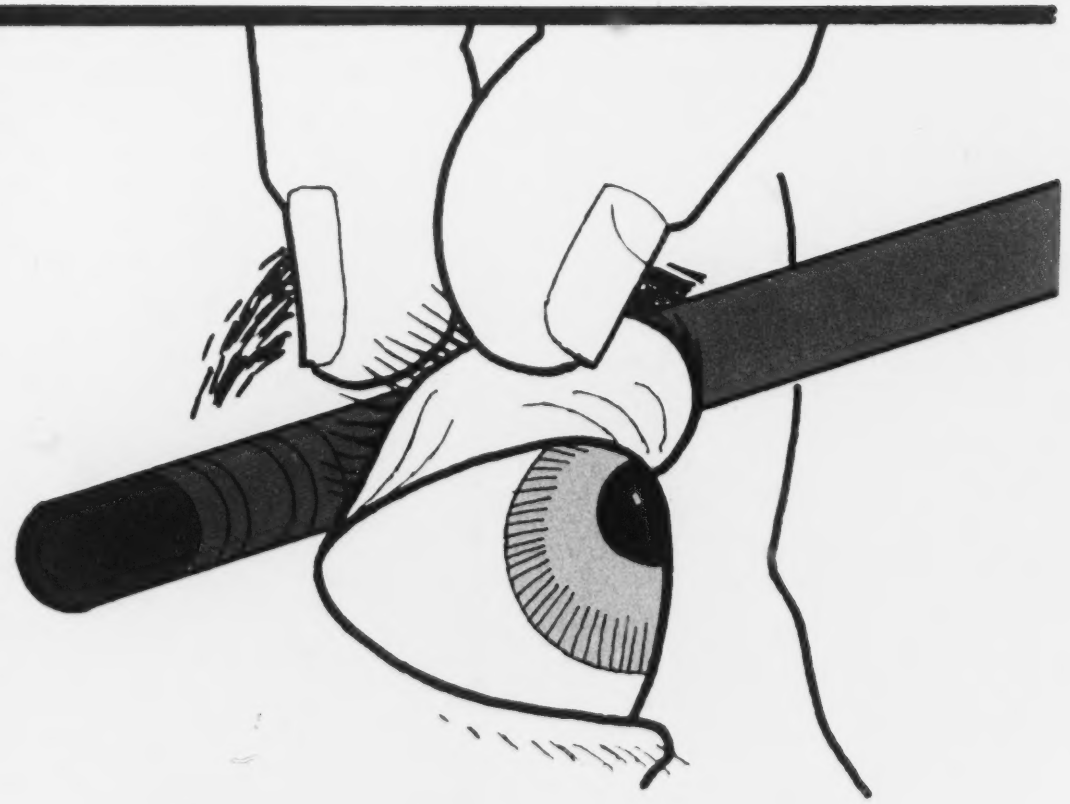


FOREIGN OBJECTS IN THE EYE

Caution: Do not rub the eye or use pointed instruments!

Pull upper eyelid over lower eyelashes





Lift eyelid, remove object with sterile gauze

FOREIGN OBJECTS IN THE THROAT

Lean the head down. Strike victim between the shoulders

Gently dislodge object with the forefinger

BURN CLASSIFICATIONS

Class	Symptoms
First Degree Burns	• Reddened outer skin • Swelling
Second Degree Burns	• Reddened Skin • Blisters (open or closed) • Damaged underskin
Third Degree Burns	• Skin is destroyed • Underskin tissue exposed and damaged • Area may be charred

GENERAL CARE FOR BURNS AND SCALDS
(Excluding Chemical Burns)

First Aid Objectives: Exclude air, relieve pain, minimize shock, and prevent infection

1. **Remove clothing from burn area (unless it is adhered to the skin)**

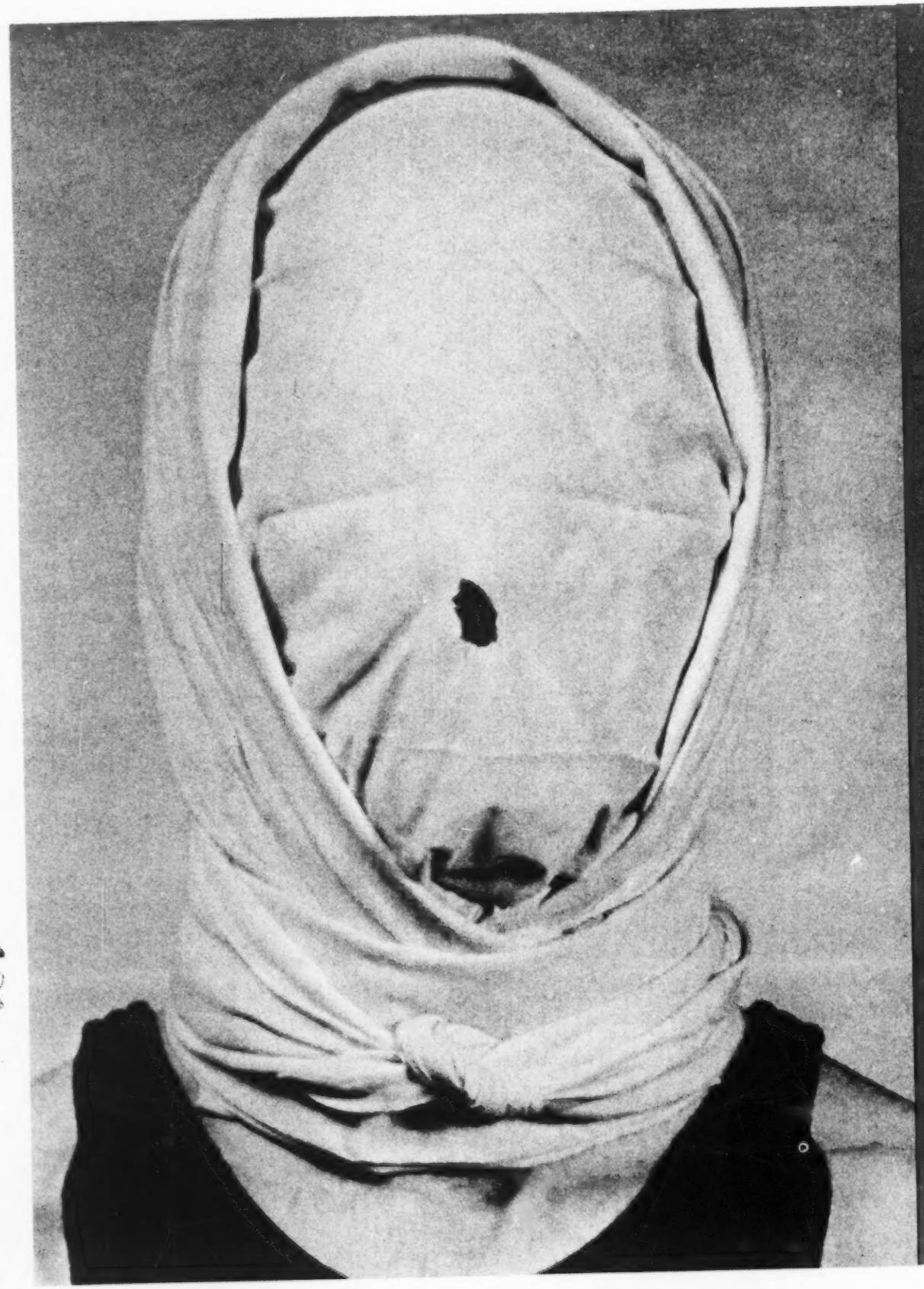
2. **Cover burn with cool, moist dressing:**
   - **Use 4 to 6 layers of loosely-applied gauze or bandage**
   - **Cover entire area with a loose dressing**

3. **Cover the victim with a blanket**

4. **Treat for shock**

GENERAL CARE FOR CHEMICAL BURNS

Flush with cold water
(5 minutes or more)



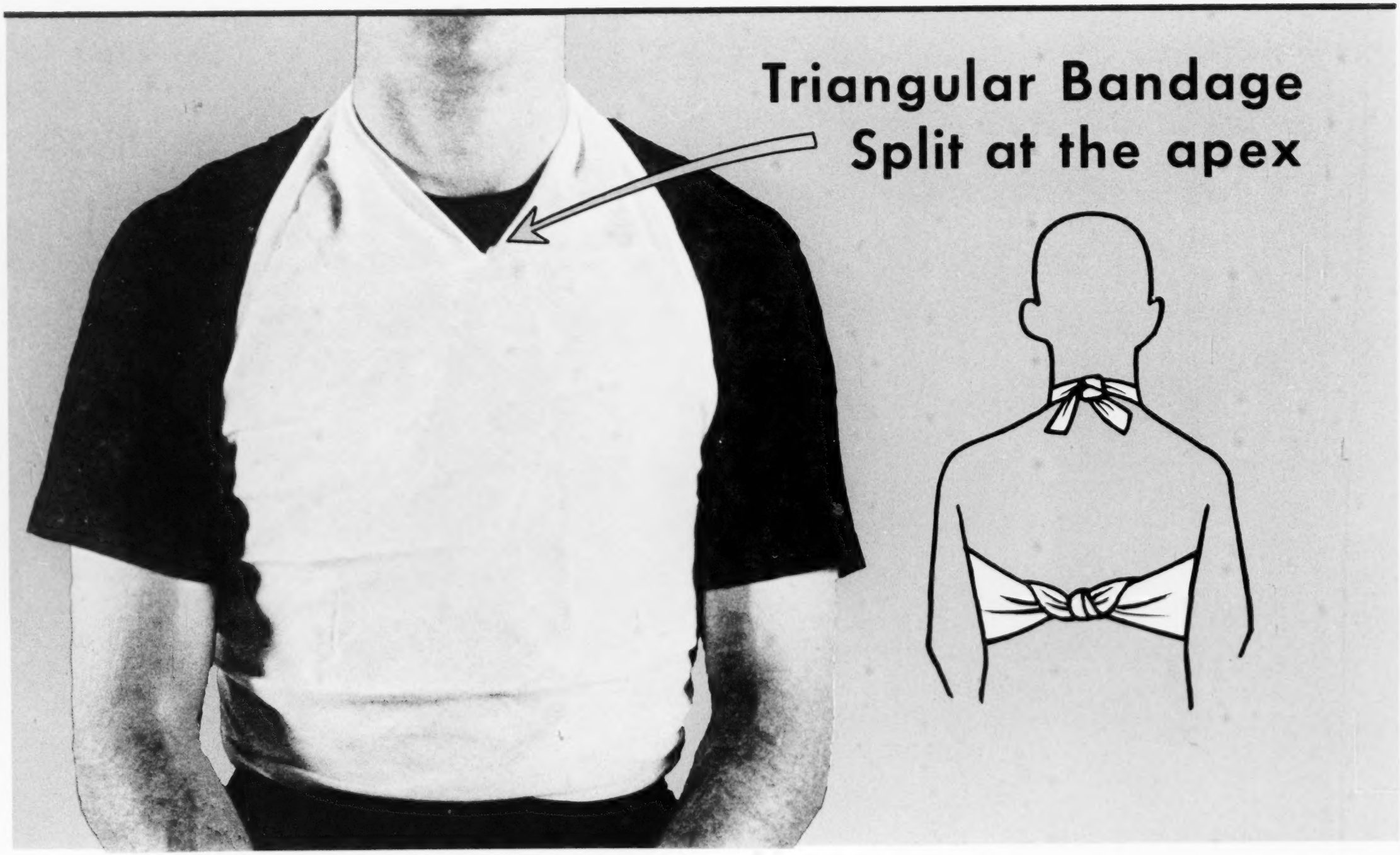
DRESSING:
BURNS OF THE FACE, HEAD AND NECK

Materials:

Sterile Gauze
(moistened)
Two Triangular
Bandages
Cravat Bandage

DRESSING: BURNS OF THE CHEST

Materials: Sterile Gauze (moistened)
Triangular Bandage



EXTENSIVE BURNS OF THE BODY

1. Cover all burned areas with cool, moistened sterile gauze
2. Protect bandages with loosely-applied triangular bandages
3. Treat for shock

Fractures and Dislocations

FIFTH FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: Three Hours

FRACTURES AND DISLOCATIONS

The Fifth Fundamental of First Aid

Fractured or dislocated bones represent serious, debilitating injuries. The fact that the affected part of the body is usually rendered helpless is serious in itself; yet this is only one of the problems associated with an injury of this type. Fractured bones frequently have sharp, jagged edges which can cut through surrounding tissue and cause a variety of related injuries – from severed nerves to cut blood vessels and muscles. Dislocations, on the other hand, may result in life-long disabilities if not treated promptly and correctly. Finally, both of these injuries are extremely painful and normally lead to physical shock.

Correct first aid treatment at the site of an accident can minimize many of these complications and shorten the recovery period for the victim. This treatment includes the proper handling of a fracture or dislocation, an important consideration with these injuries. It may call for the use of a properly prepared splint or bandage to protect and immobilize the affected limb. Or it may mean simply positioning the victim correctly and treating for shock.

In this unit, the symptoms and treatment for fractures and dislocations of all parts of the body have been outlined in detail. The instructor's outline which follows has been arranged to help make classroom presentations easy. It includes suggested classroom demonstrations and student exercises. Supporting visuals (transparencies for overhead projection) have been provided to reinforce the instructor's presentations and to help clarify the procedures described.

Instructor's Notes

Suggested Comments and Order of Presentation

I. The Skeleton

A. The *skeleton* is the framework of the human body. It is made up of bones of varying sizes and shapes which, together, have a number of important functions:

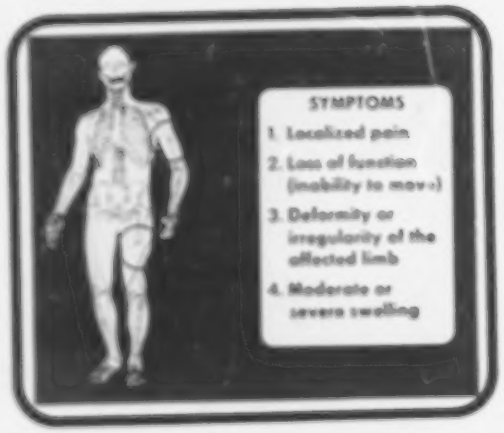
1. They give shape and form to the body;
2. They protect the vital organs;
3. They support and carry the soft, internal parts of the body;
4. They provide joints for movement (with the help of attached muscles and ligaments).

B. The bones in the skeleton are rigid and strong. Yet severe blows and stresses can result in serious damage to bones.

1. Bones may *fracture*.
2. Or they may be painfully removed from their proper position in the body. Such injuries are known as *dislocations*.

C. In this section of the first aid course, you will learn how fractures and dislocations are to be treated until medical aid arrives, or until the patient can be moved safely.

Instructor's Notes



Visual No. 53
"Types of Fractures"

Place the transparency on the projector and turn on the lamp as you begin your discussion of simple and compound fractures. Working on the surface of the transparency with a pointer, direct the students' attention to the illustrated features.

While you are discussing the types of fractures, you may want to cover the right side of the transparency with a *revelation shield*, a piece of paper or cardboard which will block out the information on "symptoms" until you are ready to discuss them.

Suggested Comments and Order of Presentation

II. Fractures

[Use visual here.]

A. A fracture is a broken bone. There are many types, but in first aid they are divided into two groups: *simple fractures* and *compound fractures*.

1. In a simple fracture, there is little displacement of the broken ends of a bone. The fractured bone remains under the skin in approximately its normal position.

2. In a compound fracture, the broken ends of the bone actually break through the skin and may remain extended through the resulting wound.

B. It is easy enough to diagnose a compound fracture, but simple fractures are sometimes hard to detect.

C. The symptoms of a fracture are:

1. Pain in the region of the fracture;

2. Loss of function (an inability to move the affected limb);

3. Deformity or irregularity of the affected limb or part of the body;

4. Moderate or severe swelling.

D. If there is reason to believe someone has a fractured bone, he should be handled with great care.

1. Broken bones often have sharp, jagged edges, and rough handling can result in damage to the surrounding tissue.

Instructor's Notes

Suggested Comments and Order of Presentation

a. Movement of the injured part may increase pain by putting pressure on nerve endings.

b. It may also cause the bone to pierce arteries or veins, causing severe bleeding and resulting shock.

c. The edges of a broken bone can also cut muscles and nerves, prolonging the recovery period or causing permanent disability.

E. If you are *certain* there is a fracture, take steps to support and immobilize the affected limb or part with a splint or bandage. The materials and techniques will be discussed in this section of the first aid course.

F. When there is a fracture, always treat for shock. It usually follows these injuries.

If you would like to list the requirements of a splint for the students, write them on a piece of clear, transparent film with a felt-tipped marking pen. The film may be placed on the projector while you write on the requirements. The information will be projected for the class to read immediately.

III. Using a Splint

A. The purpose of a splint is to support, protect and immobilize the injured part.

B. To be effective, a splint must meet a number of requirements:

1. It must be firm and rigid;
2. It must be long enough to prevent movement on either side of the fracture;
3. It should be as wide as the thickest part of the fractured limb;
4. It should be well padded so the inner surfaces are not in contact with the skin.

C. There are two types of splints used in first aid:

1. Plastic inflatable splints for arms and legs which may be inflated over the injury, immobilizing the broken bone or bones.
2. Improvised splints which may be made from any rigid material – wood planks, handles, laths, drill stems, heavy cardboard, newspapers or magazines.

D. When placing bandages for a splint, use the natural arches of the body (as under the knees, small of the back and neck).

1. A thin stick or splint may be used to slip the bandage under these arches.
2. Move the bandages gently up or down to the position where they are to be used.
3. If an arm or leg has been fractured, carefully place the limb in as nearly a "natural" position as possible. *Do not pull or twist the limb.*

The students should be shown how a fractured limb is handled; how it is supported during the application of a splint and how it is protected from further injury.

681-1389

Instructor's Notes

A demonstration on one of the students will be helpful at this point in the presentation.

Prepare a padded splint for a fracture of the forearm. It may be used to demonstrate the proper method of preparing a splint now. Later it can be used to demonstrate treatment for this fracture.

Suggested Comments and Order of Presentation

a. Gently take hold of the injured limb well below the fracture, while an assistant supports the underside of the limb on both sides of the fracture.

b. Carefully move the limb into the natural position and apply the splint.

c. If a padded splint is used, place extra padding under all hollow spaces such as the knee, ankle or wrist.

d. Support the fractured limb until dressing has been completed.

4. Tie the bandages away from the splints.

   a. There are a few exceptions to this rule. They will be discussed later when we cover the treatment of specific kinds of fractures.

5. When treating a compound fracture, and before applying a splint, tie a constricting bandage or tourniquet loosely in position to control possible arterial bleeding.

   a. If bleeding occurs, tighten the constricting bandage or tourniquet.

   b. Dress the wound with a sterile bandage compress and cover bandage as described in the section dealing with open wounds for that part of the body.

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Instructor's Notes

Suggested Comments and Order of Presentation

IV. Treatment for Fractures

A. The correct first aid treatment for fractures depends on the location of the fractured bone, its size, shape and function.

B. The procedures for treating fractures are therefore discussed according to type and location, beginning with fractures of the skull and ending with treatment for fractures of the lower extremities (ankle, foot and toe).

1. Fractures of the Skull

a. The skull is made up of 22 bones which are fused together.

b. The bones of the skull encase the brain, which can easily be damaged by a blow, a bump, or lack of blood supply. The major function of the skull is to protect the brain.

c. Any fracture of the skull is serious because of possible injury to the brain.

d. The skull may be fractured without a visible wound of the scalp.

e. The symptoms for a fracture of the skull are sometimes hard to distinguish.

(1) The patient may or may not be conscious.

(2) With some skull fractures, a mixture of blood and serum may flow from one ear or both ears.

(3) There is often bleeding from the nose or mouth. Bleeding into the eyes may occur.

(4) The pupils of the eyes may be unequal in size, indicating pressure on the brain.

Instructor's Notes

Visual No. 54
"Treatment – Suspected Skull Fracture"

The information in your outline corresponds with the information on the transparency. It is suggested, however, that you work from the outline when presenting this visual. The commentary expands and clarifies the points in the visual.

Suggested Comments and Order of Presentation

f. All serious injuries to the head should be considered possible fractures of the skull and treated as such.

g. Treatment for fracture of the skull should be given without delay.

[Use visual here.]

(1) Lay the patient down with his head and shoulders slightly raised and supported by a pad.

(a) Turn his head so it is not resting on the fracture.

(b) If there is bleeding from the ear, turn the head so the affected ear is on the lower side.

(2) If the patient's breathing is noisy (with a bubbling sound), lay him on his side in the three-quarter prone position.

(a) Support the patient in this position with a pad in front of the chest and draw up his upper knee.

(b) Make sure the throat and air passages are free of obstructions.

(c) Watch the patient to see that the air passage does not become blocked, but do not attempt to rouse him.

(d) Maintain the position of the head during transportation and avoid all unnecessary movement.

(3) If an open wound is present, control bleeding and dress the wound *without pressure*.

(a) Tie knots in the dressing *away from the wound* to avoid pressing

bone fragments into the brain.

(4) Apply a cold compress to the region of the fracture.

(5) Keep the patient warm and treat for shock.

2. Fractures of the Nose

a. With a fracture of the nose, there is visible deformity of the ridge of the nose.

b. The fracture can be simple or compound.

c. The symptoms are pain, bleeding, swelling and deformity.

d. To treat a fractured nose, apply a sterile bandage compress as for a wound of the nose, making sure it is not too tight.

3. Fracture of the Upper Jaw or Cheekbone

a. If there is an open wound, treat as a wound of the face.

b. If there is no open wound, a dressing is not necessary, but the patient should be taken to a doctor.

4. Fracture of the Lower Jaw

a. In a fracture of the lower jaw, the victim's mouth is usually open. Saliva, mixed with blood, may flow from the corners. Talking is painful and difficult. Often, teeth are missing, loosened, or uneven.

Instructor's Notes

Visual No. 55
"Fractures of the Lower Jaw"

Using the visual, point out the position of each bandage and the proper ties.

Suggested Comments and Order of Presentation

b. Treatment for a fractured lower jaw requires two narrow cravat bandages:

[Use visual here.]

(1) Gently place the jaw in position so the lower teeth are against the upper teeth.

(a) Center the first cravat bandage over front of the chin. Pass the ends around the back of head and tie, leaving the ends long.

(b) Center the second cravat bandage under the chin. Pass ends over cheeks to the center of the top of the head and tie.

(c) Bring the ends of the two bandages together and tie them separately at the back of the head.

5. Fracture of Collarbone

a. Fractures of the collarbone are frequently caused by a fall with the hand outstretched, or by a blow on the shoulder.

b. The arm on the injured side is partially helpless.

c. The shoulder on the injured side is lower, and droops forward.

d. The patient has a tendency to keep his forearm bent across his chest and supports the injured arm at the elbow with the other hand.

e. The collarbone may appear to be crooked or deformed.

f. Treatment for a fracture of the collarbone calls for two cravat bandages and a heavy pad (3 inches thick, 4 inches wide and 5 inches long).

Instructor's Notes

Visual No. 56
"Fractures of the Collarbone"

Suggested Comments and Order of Presentation

[Use visual here.]

(1) Place the pad beneath the arm on the injured side. This will help limit movement of the shoulder.

(2) Center a narrow cravat bandage outside the arm just below the shoulder.

(a) Carry one end across the back under the opposite armpit to the front of the uninjured shoulder.

(b) Carry the other end under the arm on the injured side and over the pad just below the armpit to the back of the arm.

(c) Cross under the bandage around the back, carrying the end over the uninjured shoulder.

(d) Tie at the front of the uninjured shoulder over a pad.

(e) This bandage should be tight enough to pull the injured shoulder back into place.

(3) Center the second narrow cravat bandage on the outside of the arm just above the elbow on the injured side.

(a) Carry the ends around the arm and body (one end across the chest and the other end across the back).

(b) Tie over a pad under the arm on the uninjured side.

(4) Place the arm in a triangular sling with the hand raised about halfway up the chest.

Instructor's Notes

Suggested Comments and Order of Presentation

(a) An assistant should support the arm while the dressing is being applied.

6. Fractures of the Shoulder Blade

   a. This is not a common injury. When it occurs, it is usually the result of a direct blow on the shoulder blade.

   b. The symptoms of a fractured shoulder blade include pain on the injured side, swelling, and inability to swing the arm backward or forward from the shoulder.

   c. Treatment calls for the application of a triangular bandage and a cravat bandage.

      (1) Place the forearm in a triangular bandage sling.

      (2) With a wide cravat bandage, secure the arm to the chest by centering the bandage just below the point of the shoulder and carrying one end across the chest, the other end across the back.

      (3) Tie the ends over a pad on the opposite side.

7. Fractures of the Upper Third of the Arm

   a. It's difficult to immobilize a fracture of the upper third of the arm.

   b. Treatment of this type of fracture calls for the application of a wide cravat bandage and a triangular bandage.

Instructor's Notes

Visual No. 37

"Fractures of the Arm"

While discussing fractures of the upper third of the arm, cover the right side of the transparency with a revelation shield. This will help eliminate confusion for the students.

Turn off the projector after your discussion of this dressing.

Demonstrate the use of an inflatable plastic splint for the class. It is important that they understand how to handle the fractured limb during the application of these splints, as well as the techniques of application.

Suggested Comments and Order of Presentation

[Use visual here.]

(1) While an assistant supports the arm on both sides of the fracture, bind the arm to the chest with a wide cravat bandage extending from the shoulder down.

(2) Carry the ends of the bandage around the arm and body, one end across the chest and the other across the back.

(3) Tie over a pad on the uninjured side.

(4) Place the forearm in a triangular bandage sling.

c. If the fracture is a compound fracture, apply a dressing to the wound and apply a tourniquet or constricting bandage loosely before binding the fracture.

b. Fractures of the Lower Two-Thirds of the Arm, Elbow, Forearm, or Wrist

a. If an inflatable plastic splint is available, it should be used for this type of fracture.

(1) While an assistant supports the arm on both sides of the fracture, lay the arm on an open plastic splint.

Instructor's Notes

Turn the projector lamp on with Visual No. 57 in place. Remove the *revelation shield*, exposing the illustration of the dressing for fractures of the lower two-thirds of the arm.

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Suggested Comments and Order of Presentation

(2) Close the splint around the arm carefully, continuing to support the limb.

(3) Inflate the splint until it is rigid and secure the air stem.

b. Otherwise, improvise a splint from two boards (¼ inch thick by 4 inches wide).

(1) Pad the boards with soft material.

(2) Fasten the two boards in an L-shaped splint.

(3) The first splint should extend from one inch below the armpit to the point of the elbow.

(4) The second splint should be long enough to extend from the point of the elbow to one inch beyond the end of the middle finger.

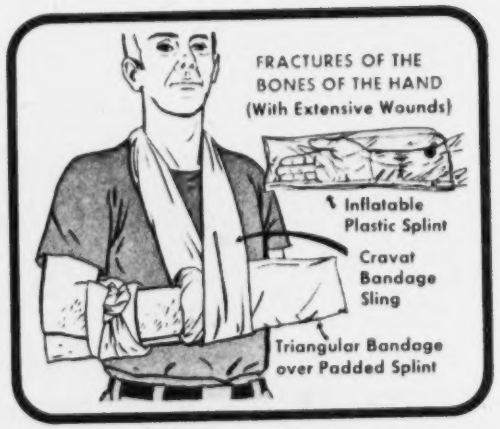
c. While an assistant supports the fracture on both sides of the break, apply the splint to the inner side of the arm and forearm (with the forearm across the chest).

(1) Place four narrow cravat bandages to hold the splint. One should be located on the upper arm, one above the elbow, one below the elbow and one at the back of the wrist and hand.

d. Place the forearm in a cravat bandage sling.

e. If the fracture is a compound fracture, apply a tourniquet or constricting bandage loosely over the arm pressure point, and dress the wound before applying the splint.

Instructor's Notes



Visual No. 58
"Fractures of the Hand"

Suggested Comments and Order of Presentation

9. Fractures or Crushing of the Hand or Fingers

   a. Apply a well-padded splint to the inside of the forearm and hand (¼ inch thick, 4 inches wide and long enough to reach from the point of the elbow to one inch below the middle finger).

   b. Center a cravat bandage on the outside of the forearm just below elbow.

[Use visual here.]

      (1) Pass the ends around the forearm one or more times.

      (2) Tie on outside of forearm.

   c. Apply a triangular bandage under the splint at the wrist. Cross the ends over the hand and under the wrist, tying them at the back of the wrist.

      (1) Bring apex down over the knot and tuck it under.

      (2) Place the forearm and splint in a cravat bandage sling, palm down, to minimize pain.

   d. If there is a compound fracture, apply a constricting bandage or tourniquet and dress the wound.

10. Fractures of the Ribs

   a. There are 12 ribs on each side of the body and they are attached to vertebraes in the back.

   b. The seven upper ribs are attached to the sternum (breast bone) by cartilage.

   c. The ribs protect the lungs and heart.

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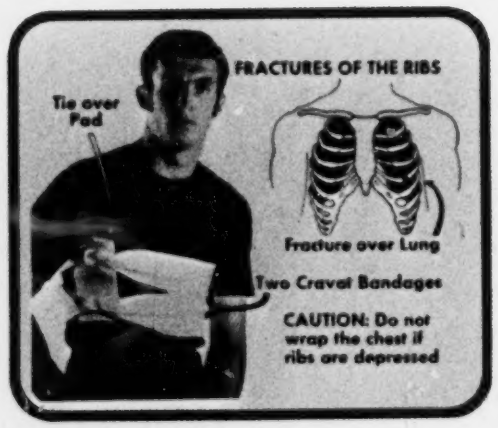
Instructor's Notes



Visual No. 59
"Fractures of the Ribs"

Use the small illustration at the upper right of the transparency to call attention to the danger fractured ribs pose for internal organs (especially the lungs).

Suggested Comments and Order of Presentation

[Use visual here.]

d. If a rib has been fractured it can easily puncture and collapse the lung.

e. Movement of a patient with a fractured rib should be limited and cautious to avoid injury to internal organs.

f. The general symptoms or signs of a fractured rib are:

(1) Severe pain on breathing;

(2) Tenderness over the fracture;

(3) An inability to breathe deeply because of pain;

(4) Noticeable depression of the chest.

g. If a lung has been punctured by the bone, the patient may cough up frothy blood.

h. Rib fractures are divided into two classes: *uncomplicated* and *complicated*.

(1) Uncomplicated rib fractures may have little or no displacement of bone.

(2) In complicated fractures, the chest cavity may be visibly depressed. There may be signs of internal bleeding or open wounds in the chest allowing the passage of air from outside directly to the lungs. Frothy blood may be coming from the patient's mouth.

i. Treatment for an uncomplicated fracture requires two medium cravat bandages.

G021

Instructor's Notes

Turn off the projector and remove Visual No. 59 before discussing "complicated rib fractures."

Suggested Comments and Order of Presentation

(1) Apply the two cravat bandages around the chest to support ribs.

(a) Center the first immediately below the site of the pain.

(b) Place the second bandage above the site of the pain.

(c) Have the patient exhale.

(d) Tie the two bandages over a pad on the opposite side before allowing the patient to inhale. This will reduce the movement of the ribs caused by breathing.

j. When there is a complicated rib fracture, *do not* apply a bandage unless there is a "sucking" wound in the chest allowing air to enter the chest cavity.

(1) If the ribs are depressed, do not apply a bandage. It may cause the broken ends of the ribs to puncture the lungs.

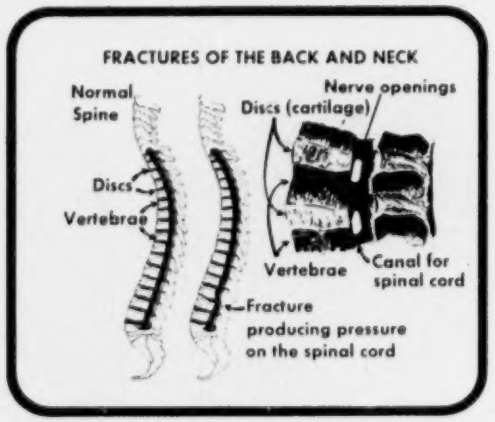
(2) When there is a "sucking" wound and the danger of air entering the chest and collapsing the lungs, cover the wound with a sterile bandage or gauze immediately. Hold the bandage in place until a dressing can be applied.

(a) Place the patient in a semi-prone position with the injured side down.

(b) In this position, the weight of the heart will cause it to fall toward the injured side, allowing more space for breathing with the other lung.

(c) If this causes pain, move the patient gently to a more comfortable position.

Instructor's Notes



Visual No. 60
"Fractures of the Spine"

Point out the cross-sectional view of the vertebrae and cartilage discs in Visual No. 60.

Point out the simulated fracture in Visual No. 60.

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Suggested Comments and Order of Presentation

(3) Treat the patient for shock. In this case, it will be severe.

11. Fractures of the Spine

a. The spine or backbone extends from the junction with the skull to the pelvic basin. It passes down the back of the skeleton.

[Use visual here.]

b. It is made up of small segments called *vertebrae* which are joined together by *cartilage*, a tough elastic tissue, giving flexibility to the trunk of the body.

c. The vertebrae and cartilage serve as a protective covering for the spinal cord (containing the nerves which control body functions).

d. Fractures of the spine may occur at any point along the back.

e. When parts of a broken vertebrae are displaced, the spinal cord may be cut or pressure may be exerted on the cord.

f. The back may or may not show deformity.

g. The back may be broken without injury to spinal cord, but if the patient sits up or is improperly handled the spinal cord may be severely damaged.

h. When treating a patient with an injured spine, use extreme care to avoid injury to the spinal cord.

(1) *Do not move the patient until you have determined the location of the fracture.*

(2) Since paralysis occurs below a fracture affecting the spinal cord, you can locate the fracture by checking for paralysis:

(a) If the patient can move his arms, but not his legs, the break is probably in the lower back.

(b) If he cannot move his arms, the break is probably high up in the region of the neck.

(c) If the patient is unconscious, check reflexes by touching the soles of the feet and the palms of the hands with a sharp pointed object. When there is no reflex muscular action, paralysis exists.

i. Fractures at the *neck* are most serious because the entire length of the spinal cord is endangered.

(1) When moving a patient with a broken neck, *take care to keep the head, neck and shoulders in the same relative positions*. Even a slight movement of the head can result in spinal damage.

(2) If the patient is found lying face down on his side, turn him on his back using extreme care to keep his head in line with his back.

(3) If a basket stretcher is used, line the stretcher with blankets.

(a) Lift the patient carefully and only high enough to allow the basket stretcher to be pushed under him.

(b) Use extreme care in lowering the patient to prevent movement of his head.

(c) When he is positioned in the stretcher, place additional padding around his head and neck to hold the head in place.

(d) Place additional padding around the body and limbs.

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Instructor's Notes

Prepare a utility splint stretcher before your presentation. The students should see how this splint, often called the "broken back" splint, is constructed.

If possible, demonstrate the proper method of padding the splint.

You may want to preview the proper method of moving a patient onto a stretcher here. The three-man lift is illustrated in Visual No. 72 and 73 in the unit dealing with transportation for an injured person.

Suggested Comments and Order of Presentation

(e) Cover the patient with blankets and tighten the straps on the stretcher.

(f) Place restraining straps or bandages across the forehead and anchor to both sides of the basket.

(g) Treat for shock.

(4) If a basket stretcher is not available, you can construct a *utility splint stretcher* for securing the patient.

(a) The splint is constructed from two long boards (7 feet long, 6 inches wide and one inch thick) and three short boards (22 inches long, 4 inches wide and 1½ inches thick).

(b) Place the two long boards next to each other about two inches apart.

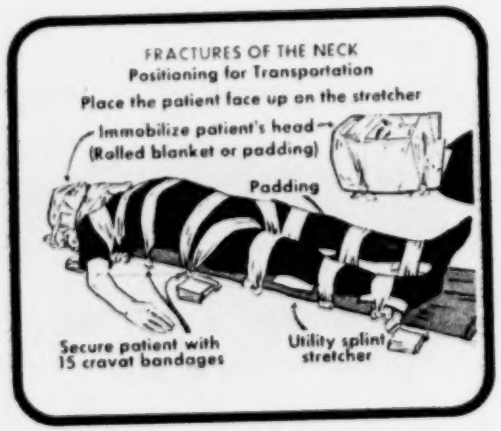
(c) Place the first short board across the two long boards at the position of the shoulders (about 15 inches from the ends of the long board). Place the second at the hips, and the third at the heels (about two inches from the foot end of the splint).

(d) Pad each long board separately with blankets, canvass or clothing. A rolled-up single blanket tied to each board at the ends provides the most effective padding.

(e) Test the splint before placing patient on it.

(f) When lifting the patient, raise him just high enough to push the splint under him. Take care to support his head, neck and shoulders to prevent movement.

Instructor's Notes



Visual No. 61
"Fractures of the Neck"

Point out the padding around the head and call attention to the location of each cravat bandage.

Suggested Comments and Order of Presentation

[Use visual here.]

(g) After the patient has been placed on the splint, keep his head level with the body.

(h) Place extra padding on each side of his head and neck. This will hold the head in place.

(i) Tie the patient to the splint with 15 cravat bandages.

(j) Place one bandage at the forehead, chin, armpit, chest and hips.

(k) Place the center of one bandage well up on the shoulder, passing one end between the long boards under the neck, continuing under the crosspiece, completing the tie at the upper edge of the splint under the armpit.

(l) Tie another bandage in the same way around the other shoulder.

(m) Pass one cravat over each hip, down between the thighs and under the crosspiece, tying the ends at the upper edge of the splint next to the hip.

(n) Place cravats around each thigh and around the long boards of the splint.

(o) Tie bandages below the knees and at the ankles.

(p) If the patient is unconscious, fold his forearms across his chest and secure them with a basket sling.

(q) Cover the patient with a blanket and treat for shock.

Instructor's Notes

Suggested Comments and Order of Presentation

(5) If a *stretcher board* is used, place additional padding around head and neck to immobilize the head.

(a) Stretcher board straps or cravat bandages should be applied in order from the head down.

(b) Support the head until bandages have been applied to hips.

(c) If the patient is unconscious, fold his forearms across his chest and secure with a basket sling.

(d) Cover the patient with a blanket and treat for shock.

(e) Secure medical attention as soon as possible.

j. Treating fractures of the *back* requires the same care used in handling fractures of the neck.

(1) Any serious back injury should be treated as a fracture.

(2) Begin by testing for paralysis in the same way described earlier – asking the patient to move his arms and legs or, if he is unconscious, checking reflexes with a pin-prick in his hands or feet.

[Use visual here.]

(3) If the patient is found lying on his abdomen, do not change his position. He will be most comfortable (and safest) in that position.

(a) Place him face down on a well-padded splint like the utility splint stretcher described earlier.

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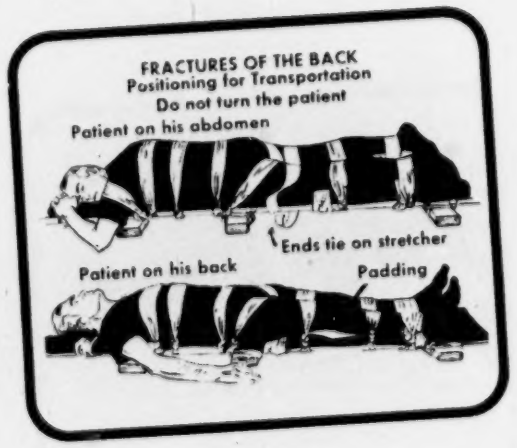

Visual No. 62
"Fractures of the Back"

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Suggested Comments and Order of Presentation

(b) Use extra padding over the splint at the chest, crotch and ankles. A blanket folded several times over the padding on each long board will work.

(c) Raise the patient carefully, with enough support to prevent any movement of the back and only high enough to push the splint under him.

(d) Apply the splint with 13 cravat bandages in the same order as those used for a broken neck (omitting the two bandages around the forehead and chin).

(4) If the patient is found lying on his side, extend his arms above his head and very carefully straighten his body before attempting to turn him.

(a) Support the entire back with the turning movement exerted at the shoulder and hips simultaneously.

(b) Turn him so he is face down on a previously prepared and tested splint.

(c) Apply the splint with 13 cravat bandages in normal order.

(d) The patient should be treated for shock.

(5) If the patient is found on his back, don't attempt to turn him on his stomach.

(a) Raise him carefully with enough support to prevent movement of the back, but only high enough to push a prepared and tested splint, stretcher board, or basket stretcher under him.

Instructor's Notes

Suggested Comments and Order of Presentation

(b) No extra padding should be placed under the shoulder area. Instead, padding to fit the curvature of the small of the back should be placed on the splint.

(c) If the patient is placed on a utility splint stretcher, apply the splint with 13 cravat bandages in the same manner as for a broken neck, eliminating the bandages around the forehead and the chin.

(d) If the patient is unconscious, fold his forearms across his chest and secure with a basket sling.

(e) Cover the patient with blanket and treat for shock.

(6) When a basket stretcher is used, line it heavily with blankets.

(a) Carefully lift the patient (while the head is held securely in line with the body) just high enough to push the stretcher under him.

(b) Lower the patient into the basket carefully.

(c) Add padding around the body and limb.

(d) Straps should be tightened and additional straps may be improvised from cravat bandages.

(e) The patient may be lifted from the basket by rolling the edges of the blanket toward him to provide handholds for four, or six persons to lift.

(f) The patient should be treated for shock.

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Instructor's Notes

Suggested Comments and Order of Presentation

12. Fractures of the Pelvis or Hip

a. Fractures of the pelvis or hip usually result from a squeeze through the hips or a direct blow.

b. They are particularly dangerous because the broken bones may puncture the bladder.

c. The symptoms of a fractured pelvis are not easily detected. Every injury to the area causing severe pain in the pelvic region should be treated as a fracture.

(1) The patient with a fractured pelvis should lie flat. The great danger with a fractured pelvis is that the bladder may be punctured.

(2) If it is necessary to move the patient, it must be done *without bending the hip or waist area*.

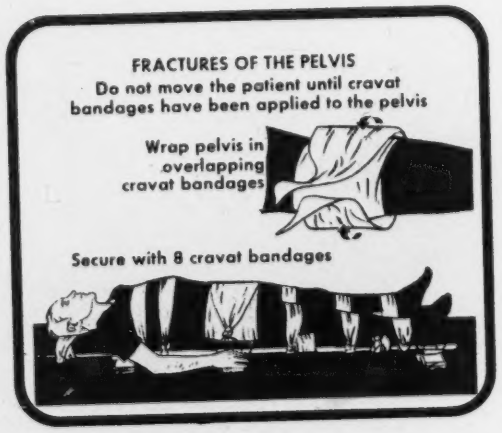
[Use visual here.]

(3) Support the pelvic region by applying wide overlapping cravat bandages from opposite sides. Tie the bandages over a pad on each hip.

(4) If the patient is found lying face down, do not move him until the two wide cravat bandages have been applied.

(a) Gently turn the patient to his back in such a way that all parts of the body are turned simultaneously.

(5) Raise the patient only high enough to place him on a well-padded stretcher board, splint, or basket stretcher.



Visual No. 63
"Fractures of the Pelvis"

Instructor's Notes

Point out the positions of cravat bandages in Visual No. 63.

Suggested Comments and Order of Presentation

(6) You may use any of the stretchers or splints described earlier – a well-padded basket stretcher, utility splint stretcher or stretcher board.

(a) If a utility splint stretcher is used, pad it well and secure the patient with eight cravat bandages.

(b) Tie one bandage around the chest under the armpits, another across the chest, two around the upper thighs, two below the knees and two at the ankles.

(7) Test any splint or stretcher before placing the patient on it.

(8) Cover the patient with a blanket, and treat him for shock.

(9) If the patient on the stretcher board is unconscious, pass a cravat bandage around his head and the stretcher board and tie it. Fold his forearms across his chest and secure them with a basket sling.

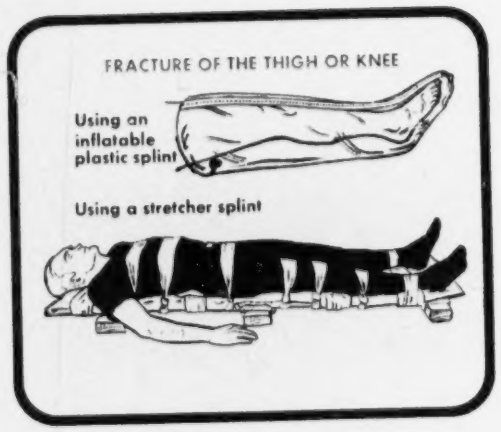
(10) Take the patient to a doctor as soon as possible. If the bladder has been punctured, medical help must be secured at once. An operation may save the patient's life only within the first hour or two.

13. Fractures of the Thigh and Knee

a. Fractures of the lower extremity are easy to recognize in most cases. The symptoms include pain at the site of the fracture, swelling, deformity and an inability to move the leg below the fracture.

b. The treatment for a fracture of the thigh or knee calls for the application of a splint to protect, support and immobilize the limb. The splint used may be an inflatable plastic splint, or a padded utility splint stretcher.

Instructor's Notes



Visual No. 64
"Fractures of the Thigh and Knee"

Point out the position of each cravat on Visual No. 64.

Suggested Comments and Order of Presentation

[Use visual here.]

c. If an inflatable plastic splint is being used, roll up or cut away the clothing to a point above the upper end of the splint.

(1) While supporting the leg on both sides of the fracture, lay it in a full-leg inflatable plastic splint.

(2) Close the splint around the limb and inflate it to immobilize the extremity.

(3) Do not attempt to overinflate the splint. Normally it takes about ten breaths to inflate a leg splint.

d. A utility splint may also be used for a fractured thigh or knee.

(1) Before you place the patient on the splint, pad it carefully. Pads should be placed under all the natural arches in the body – at the small of the back, the knees and ankles.

(2) Raise the patient slowly, supporting the fracture on both sides, and place the prepared and tested splint under him.

e. If there is a compound fracture, apply a constricting bandage loosely over the uninjured tissue as near the wound as possible. If bleeding should occur, the constricting bandage may be used to control it.

(1) Dress the wound before the splint is applied.

f. Use seven cravat bandages to secure the patient to the splint; one around the body and splint under the armpits, another around the chest and splint,

Instructor's Notes

Suggested Comments and Order of Presentation

a third around the hips and splint, one around the upper thigh and splint, one around the lower thigh and splint, one just below and around the knee and splint, and one around the ankle and splint.

(1) Tie all cravats near the splint on the *injured side* of the patient.

g. Keep the patient warm and treat for shock.

14. Fractures of the Kneecap

a. Treatment for a fractured kneecap closely resembles that given for a fractured thigh or knee; a full leg inflatable plastic splint or utility splint stretcher may be used to protect and immobilize the knee.

b. If an inflatable plastic splint is used, follow the same steps outlined during the discussion of treatment for a fractured knee.

c. The proper support for a fracture of the kneecap is given on top of the leg, with one hand placed above the kneecap and the other below the kneecap.

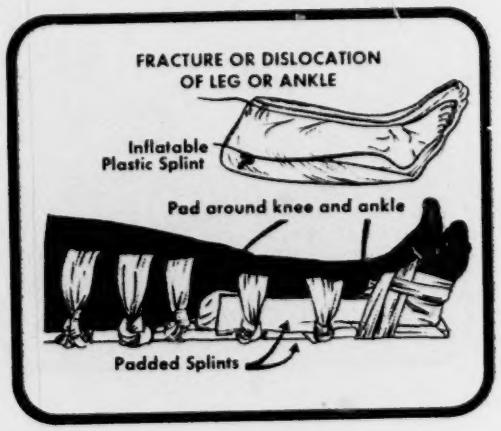
d. If a padded utility splint stretcher is used, it is applied with seven cravat bandages.

(1) The first four cravat bandages are used to secure the patient to the splint in the order described earlier.

(2) Center the fifth cravat bandage above the kneecap and bring the ends around the leg and splint, cross them and bring them to the top of the leg above the kneecap. *Do not tie them.*

(3) Center the sixth cravat bandage below the kneecap, pass the ends around the leg and splint, cross them and bring them over the thigh above the kneecap. *Tie the ends over the fifth cravat.*

(4) Pull the ends of the fifth cravat tight, and tie them below the kneecap.



Visual No. 65
"Fractures or Dislocation of the Leg or Ankle"

(5) Apply the seventh cravat around the ankle and the splint. Tie the ends on the injured side near the splint.

e. Treat the patient for shock.

15. Fractures of the Leg or Ankle

a. When the leg or ankle is fractured, a splint is used which reaches from a point tight against the buttock at the upper end, and beyond the heel.

b. Carefully raise the injured limb, while the fracture is being supported on both sides of the break, and place a well-padded splint under the limb.

c. Apply six cravat bandages to the leg and splint.

[Use visual here.]

(1) The first three bandages are applied at the crotch, mid-thigh and above the knee.

(2) Before applying bandages below the knee, pad both sides of the leg from the instep to the knee.

(3) The fourth and fifth bandages are wrapped around the padding, splint and leg below the knee at a point just above or below the fracture (depending on the distance between the fracture and the knee or ankle).

(4) Center the sixth bandage at the instep and bring the ends up the sides of the ankle. Cross them at the top and pass them around the leg, padding and splint. Cross the ends under the splint and return them to the top of the ankle. Cross them again and tie under the instep securely but not tightly.

Instructor's Notes

Suggested Comments and Order of Presentation

d. If the fracture is compound, apply a constricting bandage loosely around the leg above and as near the wound as possible over uninjured tissue.

e. If an inflatable splint is used, follow steps given earlier for fractures of the thigh or knee, while supporting the fracture.

f. Dress the wound before applying the splint.

16. Fractures (or Crushing) of Bones of the Foot and Toes

a. Such fractures are caused by direct or indirect blows to the foot and toes.

b. The symptoms are severe pain, swelling and deformity.

c. Treatment calls for the application of two cravat bandages and a well-padded splint about 4 inches wide, ½ inch thick, and long enough to reach from ½ inch beyond the heel to ½ inch beyond the big toe.

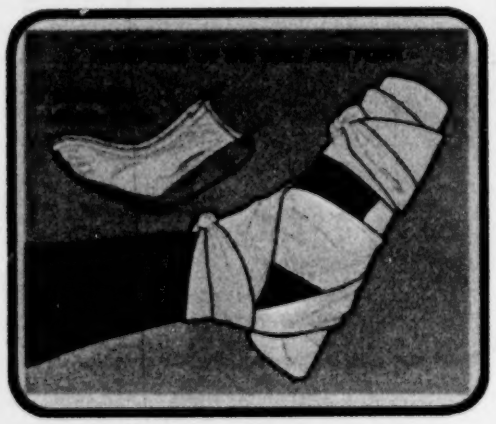
[Use visual here.]

(1) Center the first cravat at the back of the foot just above the heel. Bring around the ankle, cross the ends over the arch and carry them under the foot and splint. Bring them around the heel, cross and tie at the front of the foot.

(2) Center the second cravat on top of the toes, carry the ends around the foot and splint several times and tie on top of the foot.

d. If there is a compound fracture, apply a constricting bandage loosely just above the ankle.

e. Dress the wound before applying the splint.



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Visual No. 66
"Fractures of the Toes and Foot"

Instructor's Notes

Suggested Comments and Order of Presentation

V. Dislocations

A. Where the bones come together without forming a bony union, a *joint* is formed. There are three types in the body:

1. Immovable joints;
2. Joints with limited motion;
3. Freely movable joints such as the joints at the jaw, elbow, hip and toes.

B. In first aid treatment for dislocations, we are concerned with freely movable joints.

C. When the bones forming these joints slip out of normal position, the result is called a *dislocation*.

1. In a dislocation, the ligaments holding the bones in proper position are stretched and sometimes torn loose.

With a felt-tipped marking pen, write the symptoms of a dislocation on a piece of clear film and project it for the class. This will reinforce your discussion and help your students retain the information.

D. The general symptoms of a dislocation are:

1. Rigidity and loss of function;
2. Deformity or irregularity of the affected joint;
3. Pain at the joint;
4. Moderate or severe swelling around the joint.

E. In first aid, no attempt should be made to reduce dislocations, except dislocations of the lower jaw, fingers and toes. Where medical help is readily available, do not attempt to reduce even these dislocations.

1. The reduction of a dislocation requires skill in manipulating the parts so as not to damage further the joint ligaments, blood vessels and nerves.

Instructor's Notes

Suggested Comments and Order of Presentation

VI. Treatment for Dislocations

A. The proper treatment for a dislocation includes the application of dressing and splints so that the affected parts are immobilized *in the line of deformity*.

B. Treatment varies according to the site of the dislocation.

1. Dislocation of the Lower Jaw

a. The symptoms of a dislocated jaw are pain at the joint, rigidity, an inability to close the mouth and difficulty in talking.

b. This is one dislocation which may be reduced by the person administering first aid, although it should not be attempted unless medical attention is not available.

(1) First, wrap both your thumbs in several layers of cloth.

(2) Rest the thumbs well back on the lower teeth of the injured person.

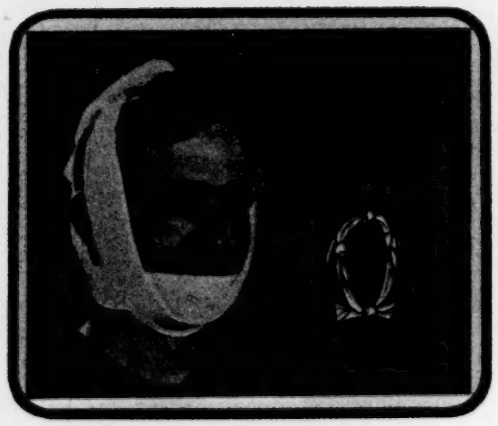
(3) With the fingers at the outside of the lower jaw, press downward, then backward toward the base of the skull.

(4) Slip the thumbs off the teeth to the side of the cheeks as soon as the jaw starts to go into place.

(5) Dress the jaw with two narrow cravat bandages in the same way you would dress a fractured jaw.

[Use visual here.]

(a) Center one cravat over the front of the chin, and tie the ends at the back of the head, leaving the ends long.



Visual No. 55, which shows the bandage for a fractured jaw, may be used to illustrate the proper positions of the bandage. The dressing is identical.

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(b) Slip an object between the teeth (a compress bandage or pencil will work). This prevents over-tightening the bandages.

(c) Place the second cravat under the chin and bring the ends to the top of the head and tie them.

(d) Take both ends of each cravat bandage and tie the corresponding ends of each cravat at the back of the head.

(e) Remove the wedging object from the patient's teeth.

(6) Do not attempt to repeat a reduction of the jaw after it has been dressed.

2. Dislocation of the Shoulder

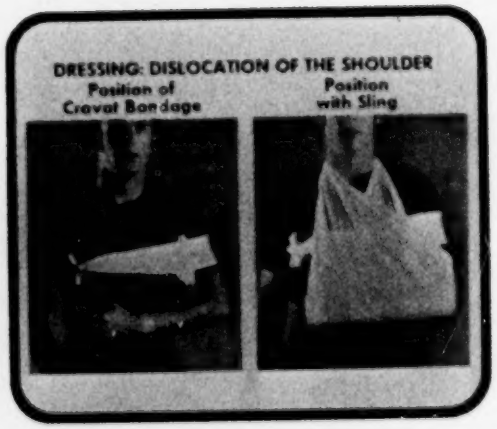
a. Shoulder joints are usually dislocated by a fall on an outstretched hand or elbow. Dislocations may also occur as a result of a sharp blow on the shoulder.

b. With this dislocation, the arm is held rigid, elbow standing one or two inches from the body. The shoulder appears to be flat with a marked depressing beneath the point of the shoulder. Pain and swelling occur at the site of the dislocation.

c. Do not attempt to reduce this dislocation. First aid treatment calls for immobilizing the joint and dressing it.

[Use visual here.]

(1) Place a wedge-shaped pad (4 inches wide and 1 to 3 inches thick) beneath the arm, extending from the armpit to the elbow.



Visual No. 67
"Dressing: Dislocation of the Shoulder"

Instructor's Notes

Pair the students off and have them apply the dressing for a dislocated shoulder to their partners.

Suggested Comments and Order of Presentation

(2) Center a cravat bandage on the outside of the arm just above the elbow.

(3) Carry one end across the chest and the other end across the back, tie the ends on the opposite side over a pad.

(4) Place the arm in a triangular bandage sling.

3. Dislocation of the Elbow

a. A dislocated elbow may result from a direct blow on the joint or by a fall.

b. The symptoms are deformity at the elbow, severe pain and an inability to bend the arm at the joint.

c. Treatment calls for the use of a splint, either straight or "L-shaped" depending on the position of the arm.

(1) If a straight splint is required, it should reach from a point one inch below the armpit to one inch beyond the tip of the middle finger.

(a) Pad the splint to conform with the deformity and place it on the inside of the arm.

(b) Use four narrow cravat bandages to secure the arm to the splint. One is placed at the upper arm, the second just above the elbow, the third just below the elbow, and the fourth at the wrist.

(c) Use a fifth bandage to secure the arm to the body.

(2) If an "L-shaped" splint is used, it should be prepared from two pieces of board (or similar material) 4 inches wide and ¼ inch thick.

(a) The upper splint should begin one inch below the armpit and extend to the point of the elbow. The splint for the lower arm begins at the point of the elbow and extends to a point one inch beyond the middle finger.

(b) Join the two parts securely, in line with the deformity of the arm.

(c) Support both sides of the dislocation while placing arm on the prepared splint, and pad the splint to conform with the deformity.

(d) Apply the splint with four narrow cravat bandages, one on the upper arm, one above and one below elbow, and one around wrist and hand.

(e) Place the forearm in a cravat bandage sling or bind arm to body according to the deformity.

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4. Dislocation of the Wrist

a. It frequently results when the hand is extended to break the force of a fall.

b. Treatment is the same as for a fractured wrist.

(1) If available, apply an inflatable plastic splint.

(2) If a plastic splint is not available, prepare an "L-shaped" splint and pad well.

(3) While an assistant supports the arm on both sides of the dislocation, lay the forearm across the chest and apply the splint to the inner side of the arm.

Instructor's Notes

Suggested Comments and Order of Presentation

(4) Secure the splint with four narrow cravats; one at the upper arm, one just above the elbow, one below the elbow, and one (crossed twice) over the wrist. Tie the last cravat at the top of the hand.

(5) Place the arm in a cravat bandage sling.

5. Dislocation of the Finger

a. The symptoms of a dislocated finger include pain, swelling and an inability to bend the finger. Sometimes the finger appears to be shortened or deformed.

b. This is another dislocation which may be reduced by the person giving first aid if medical help is not readily available.

(1) Position the hand so the palm is down.

(2) With one hand, grasp the finger above the dislocated joint. With the other, hold the finger below the joint.

(3) Pull the end of the finger with enough strength to allow the bone to slip into place.

(4) Apply a small splint (such as a tongue depressor) along the bottom of the finger and secure it with adhesive tape above and below the joint.

c. *Do not* reduce a dislocated finger if there is an open wound near the joint. Dress the wound and send the patient to a doctor.

6. Dislocation of the Hip

a. A dislocation of the hip is a serious injury and should be treated with extreme care.

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b. It usually results from a fall on the foot or knee. Or it may be caused by a heavy blow against the thigh.

c. The symptoms which indicate a dislocated hip include a lengthening or shortening of the leg, with the foot turned in or out. There is pain and swelling at the joint.

d. There are several types, but for the purposes of first aid, this injury is divided into two general categories: forward and backward dislocation.

(1) In a *backward dislocation*, the foot is turned inward and the thigh is drawn toward or across the opposite leg. This is the most common form of the injury, and the most severe.

(2) Treatment calls for a well-padded utility splint stretcher (broken-back splint) or a stretcher board.

[Use visual here.]

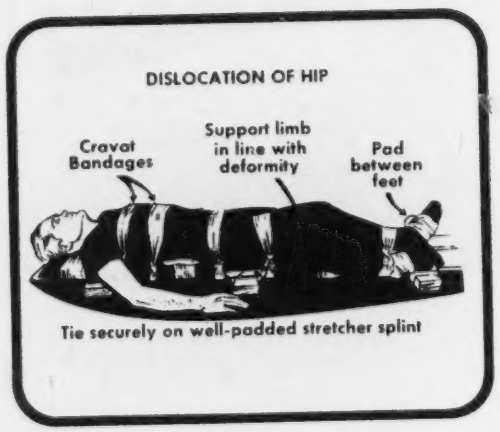
(a) Place the injured person on the padded and tested utility splint stretcher or stretcher board.

(b) Place heavy padding around the limb. A rolled up blanket, clothing or pillow will work. It must be large enough to support the limb in line of the deformity.

(c) Place a small pad between the feet.

(d) Use six cravat bandages to secure the patient to the splint; one each at the upper and lower chest, hip, thigh, ankle and over the instep.

(e) Treat the patient for shock.



Visual No. 68
"Dressing: Dislocation of the Hip"

Instructor's Notes

Suggested Comments and Order of Presentation

7. Dislocation of Knee or Kneecap

   a. Dislocation of knee or kneecap usually results from a fall on the knee.

   b. The symptoms are deformity, severe pain, and an inability to use the knee.

   c. When treating a dislocated knee or kneecap, support should be at the top of the leg, one hand above the kneecap and one hand below.

      (1) Apply a well-padded splint or a stretcher board as you would for a fracture of the kneecap, with cravat bandages crossed under the leg and splint, and tied over the leg.

8. Dislocation of the Ankle

   a. Dislocation of the ankle may show several types of deformity. Bones may or may not be broken, but there is always a marked deformity at the joint. Swelling is usually severe and rapid.

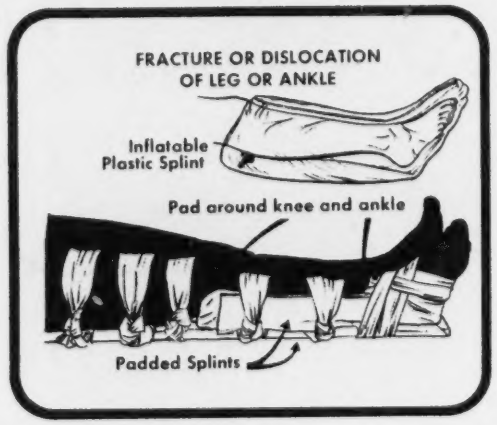
   b. When treating a dislocation of the ankle, use the same materials and procedures used to treat a fracture of the leg or ankle.

[Use visual here.]

   c. Place extra padding on the splint to conform with the deformity.

9. Dislocation of the Toe

   a. The usual symptoms of a dislocated toe are shortening, pain, deformity and an inability to bend the toe.



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Return to Visual No. 65 to illustrate the dressing used for a dislocated ankle.

b. Treatment may be given to reduce the joint when medical aid is not available.

(1) Grasp the toe in one hand below the dislocated joint. With the other hand, grasp the toe above the dislocated joint.

(2) Pull until the joint slips into its normal position.

(3) Pull only the dislocated joint. Do not grasp the toes on either side.

c. If there is an open wound, do not attempt to reduce the joint. Dress the wound and send the patient to a doctor.

THE DISCUSSION OF FRACTURES AND DISLOCATIONS ENDS HERE. On the next few pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of the techniques presented in this portion of the course.

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FRACTURES AND DISLOCATIONS

The Fifth Fundamental of First Aid

The following questions will help you evaluate the students' retention of the principles and techniques covered in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions; each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

4-22-24

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative answers given for each question. Only one of the alternatives is correct.

I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer it *true*. If you feel it is inaccurate, answer *false* and explain why you believe it is wrong.

Question	*Correct Answer*
1. Two important functions of the skeleton are to support and protect the vital organs.	True
2. A simple fracture is one in which the ends of the broken bone extend through a wound in the skin.	False (Compound fracture)
3. Improper or careless handling of fractures can cause damage to blood vessels, nerves and muscle tissue.	True
4. The purpose of a splint is to support, protect and immobilize the injured part.	True
5. The knots of a bandage compress should be tied over a fracture.	False (Should not be tied over a fracture)
6. When you suspect that a person is suffering from a skull fracture, you should position him flat with his head at the same level as the rest of his body.	False (The head and shoulders should be elevated)

Question	*Correct Answer*
7. Symptoms of a fractured jaw include pain, deformity, an inability to close the mouth, and blood, mixed with saliva, flowing from the corners of the mouth.	True
8. A patient with a skull fracture should not be aroused.	True
9. Have the patient inhale when applying the cravat bandages for a fractured rib.	False (Exhale)
10. Never move the patient until you have determined whether his neck or back is broken.	True
11. First aid treatment for a dislocation calls for immobilizing the affected joint in line with the deformity.	True
12. Never reduce a dislocation of a finger if there is an open wound.	True

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II. Completion Questions

Complete the following statements by adding the correct word.

Question	*Correct Answer*
1. The framework of the human body is made up of bones. These bones form the _____.	Skeleton
2. A broken bone is called a _____.	Fracture
3. When a bone is broken, but there is little displacement of the broken end, it is called a _____.	Simple fracture
4. Four symptoms of a fracture are pain, swelling, loss of function, and _____.	Deformity
5. Inflatable plastic splints can be used for fractures of the _____.	Extremities
6. The bones that encase the brain form the _____.	Skull
7. The patient with a skull fracture should be lying down with his head _____.	Raised or elevated
8. Bandages should not be applied when a patient has a _____ rib fracture.	Complicated
9. The great danger with a fractured pelvis is that the bladder may be _____.	Punctured
10. When the bone slips out of a joint, the injury is called a _____.	Dislocation
11. When you find a person whose leg appears to be shortened with the foot turned in, you should suspect a dislocation of the _____.	Hip

III. Multiple Choice

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three alternative answers and select the one you believe is most accurate.

Question — *Correct Answer*

1. In treating a compound fracture, you should first . . .
   a. Apply a loose constricting bandage near the wound.
   b. Have the patient move the affected part.
   c. Turn the patient onto his back.

   Answer: a.

2. One requirement of a splint is . . .
   a. That it be soft and pliable.
   b. That it be long enough to prevent movement of the joints on both sides of the fracture.
   c. That it be narrower than the limb.

   Answer: b.

3. One symptom of a fractured skull is . . .
   a. A mixture of blood and serum flowing from one or both ears.
   b. A deformity of the cheekbone.
   c. Unconsciousness.

   Answer: a.

4. Treatment for a skull fracture includes . . .
   a. Placing the patient's head lower than the rest of his body.
   b. Applying cold compresses to region of fracture.
   c. Placing the patient's head on the side of suspected fracture.

   Answer: b.

5. One complication that may develop from a fractured rib is . . .
   a. A punctured lung.
   b. A collapsed stomach.
   c. Increased respirations.

   Answer: a.

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Question *Correct Answer*

6. One of the symptoms of a fractured back is . . .
   a. Partial paralysis.
   b. Severe headache.
   c. Swelling in the lower back.

   Answer: a.

7. If you suspect damage to the spinal cord . . .
   a. Have the patient sit up.
   b. Turn the patient onto his back.
   c. Don't move the patient until he has been secured to a splint.

   Answer: c.

8. If you suspect that an unconscious patient has a broken back, you can check for paralysis by . . .
   a. Touching the soles of the feet with a sharp-pointed object.
   b. Moving the arms and legs.
   c. Reviving the patient and asking him if he has feeling in his legs.

   Answer: a.

9. When moving a patient with a fractured pelvis, you should . . .
   a. Put him in a sitting position.
   b. Bend his hip and waist.
   c. Apply wide cravat bandages to support the hip region.

   Answer: c.

10. In applying an inflatable plastic splint, you should . . .
    a. Roll up or cut away clothing from the injured part.
    b. Inflate the splint before applying it.
    c. Dress the wound.

    Answer: a.

11. The treatment for a dislocation includes . . .
    a. Strapping the dislocated limb to the body.
    b. Immobilizing the dislocation in line with the deformity
    c. Applying a dressing to the affected joint.

    Answer: b.

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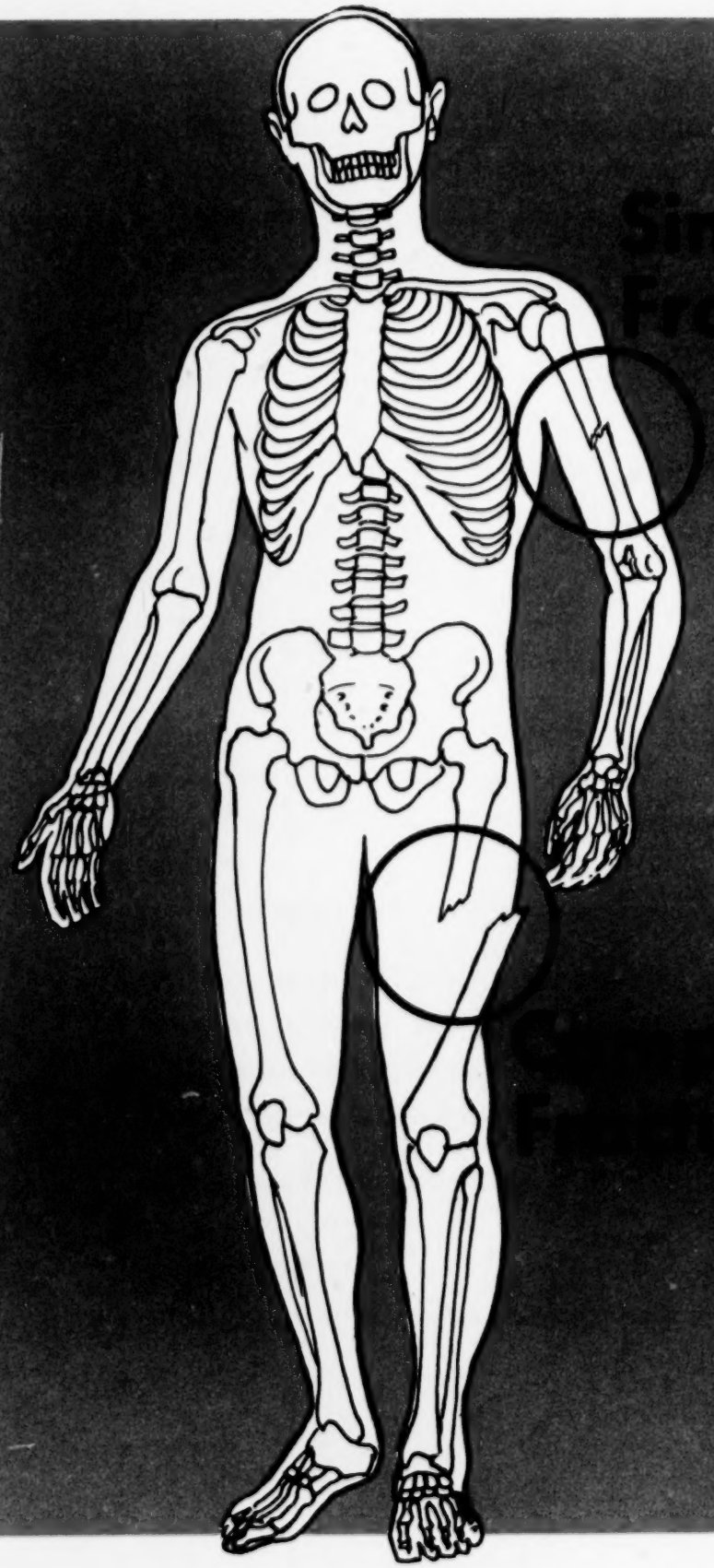
TYPES OF FRACTURES



Simple Fracture

Compound Fracture

SYMPTOMS

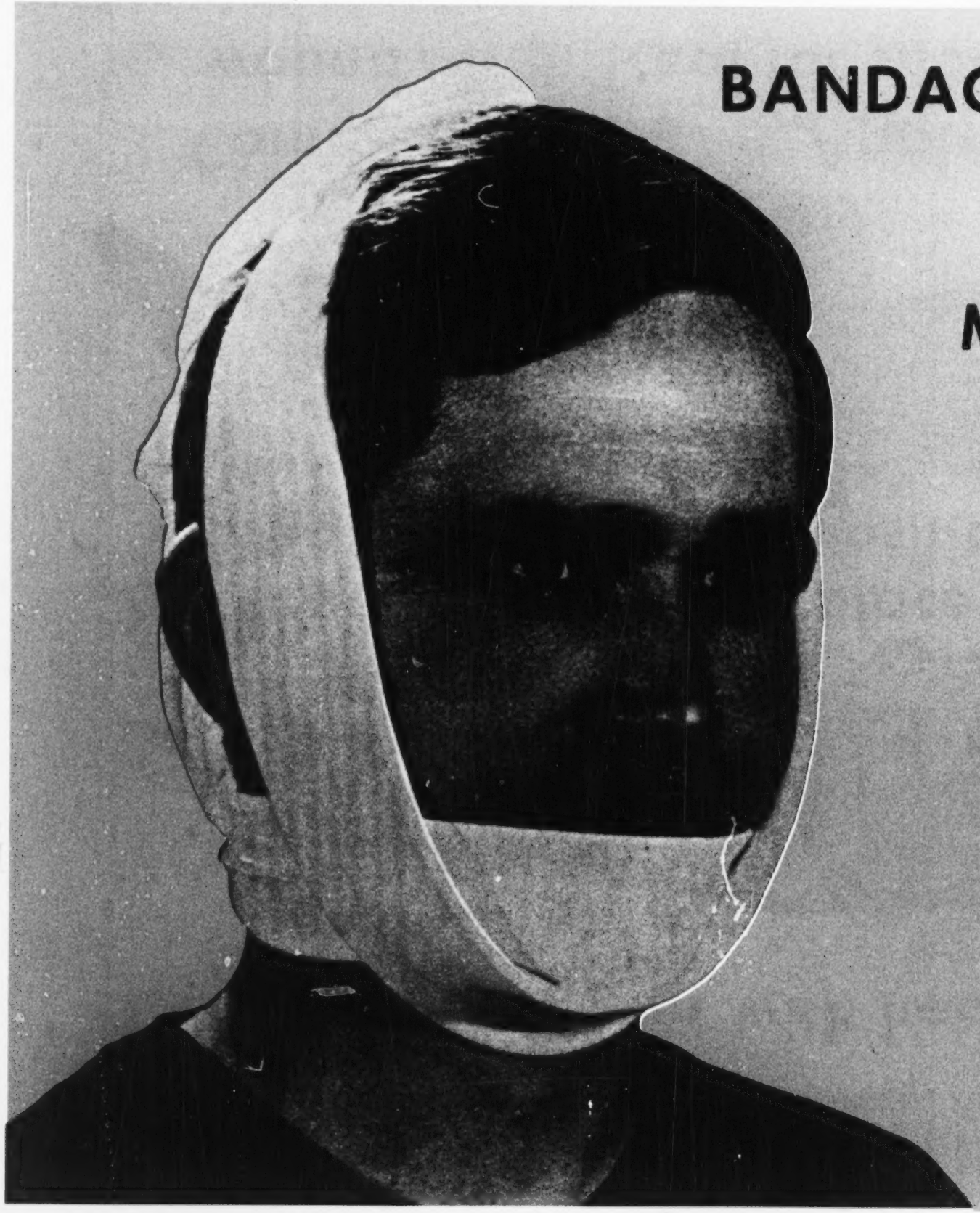
1. Localized pain
2. Loss of function (inability to move)
3. Deformity or irregularity of the affected limb
4. Moderate or severe swelling

TREATMENT: SUSPECTED SKULL FRACTURE

1. Lay patient down with head elevated

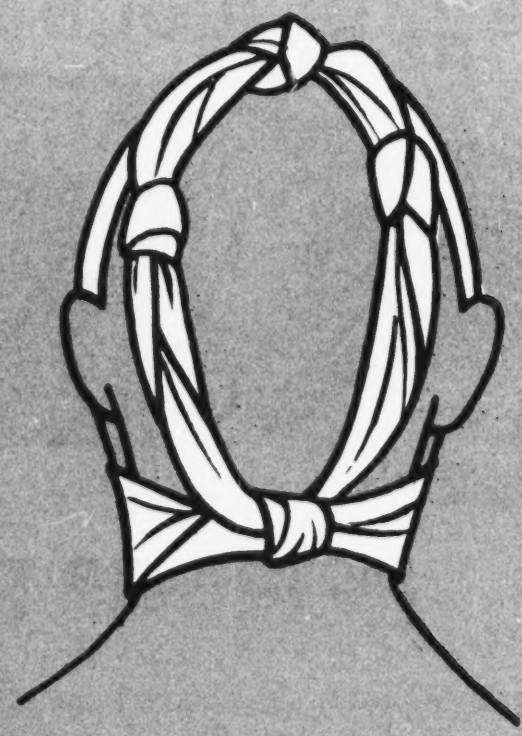
2. If breathing is noisy, place patient in the three-quarter prone position

3. Control bleeding 4. Apply cold to area of wound 5. Treat for shock

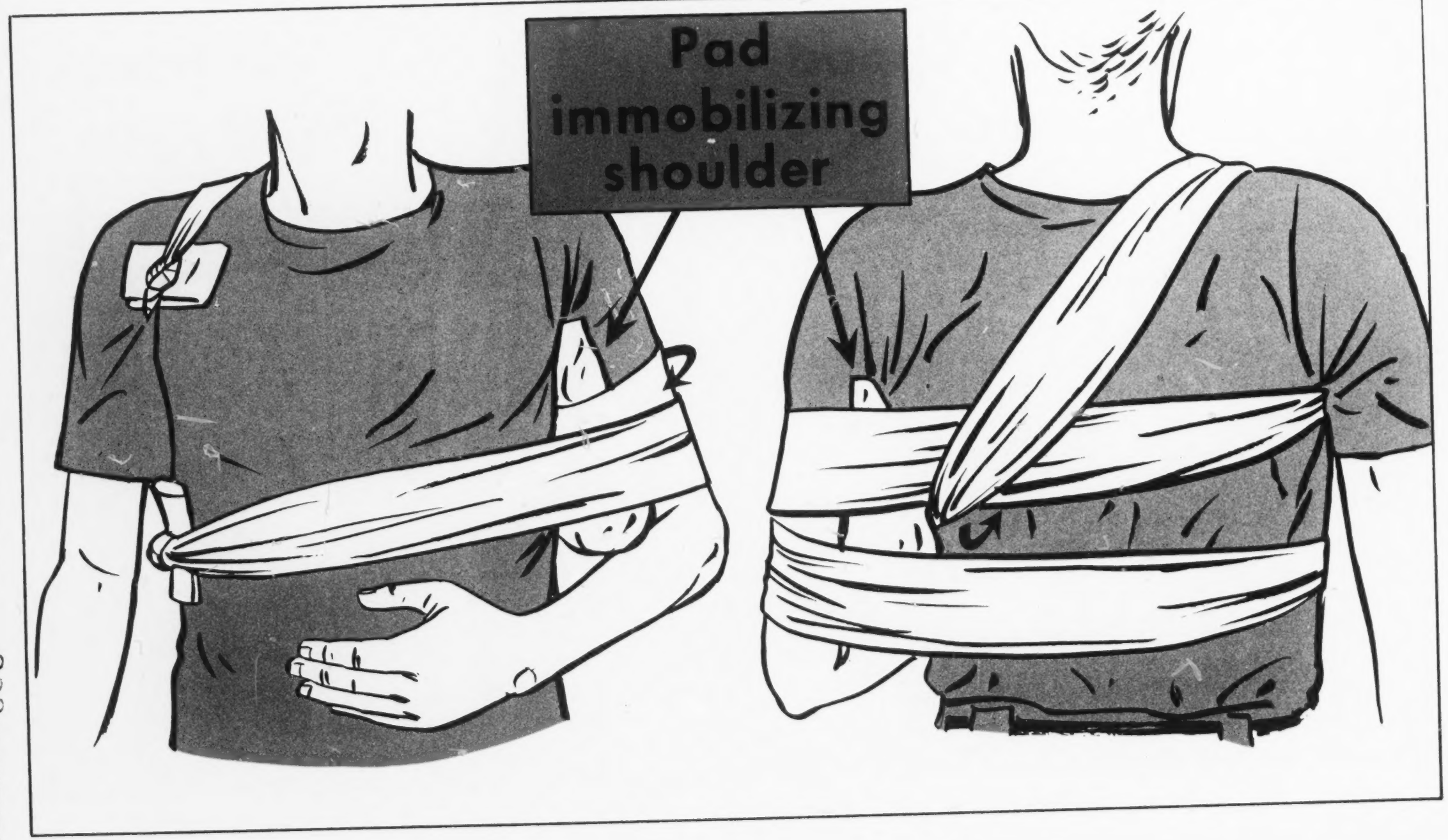


BANDAGE: FRACTURED LOWER JAW

Materials:
Two Cravat Bandages



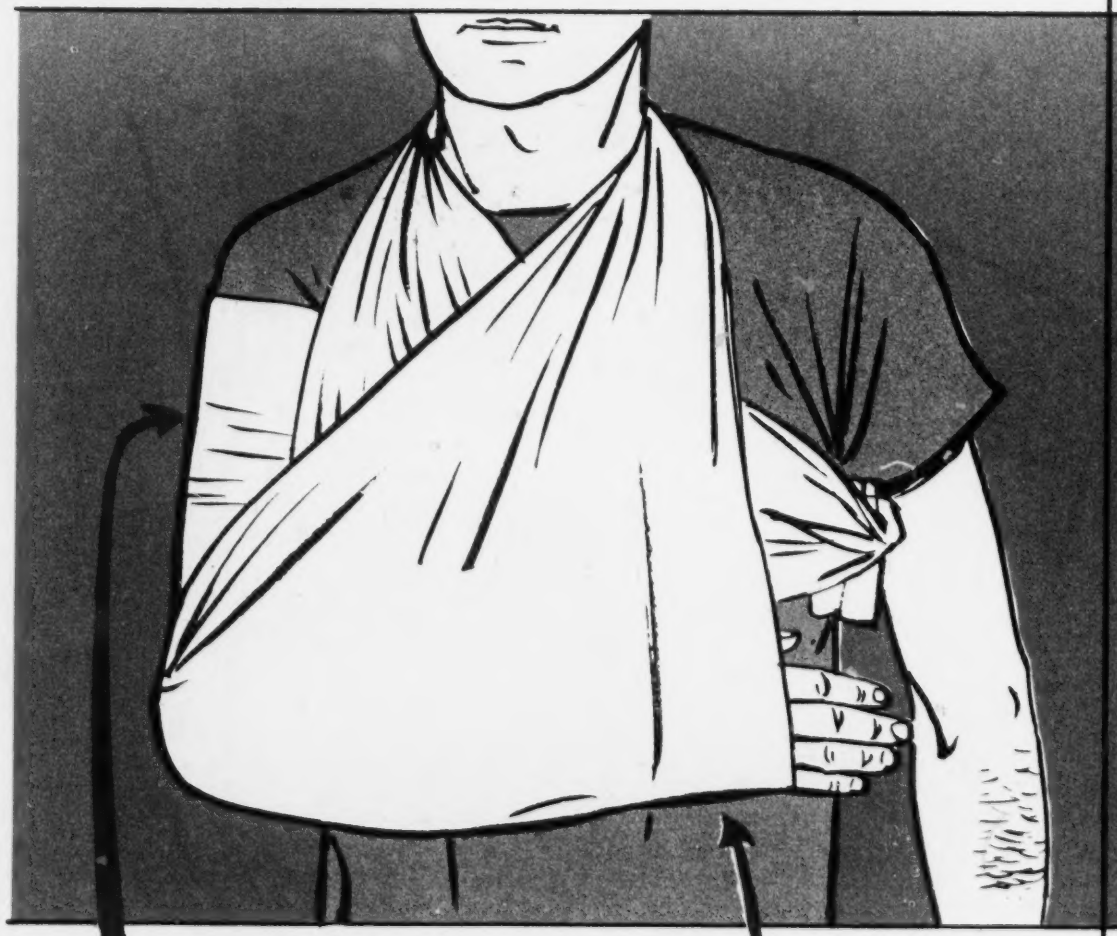
FRACTURES OF THE COLLARBONE



Place arm in tight triangular bandage sling

FRACTURES OF THE ARM

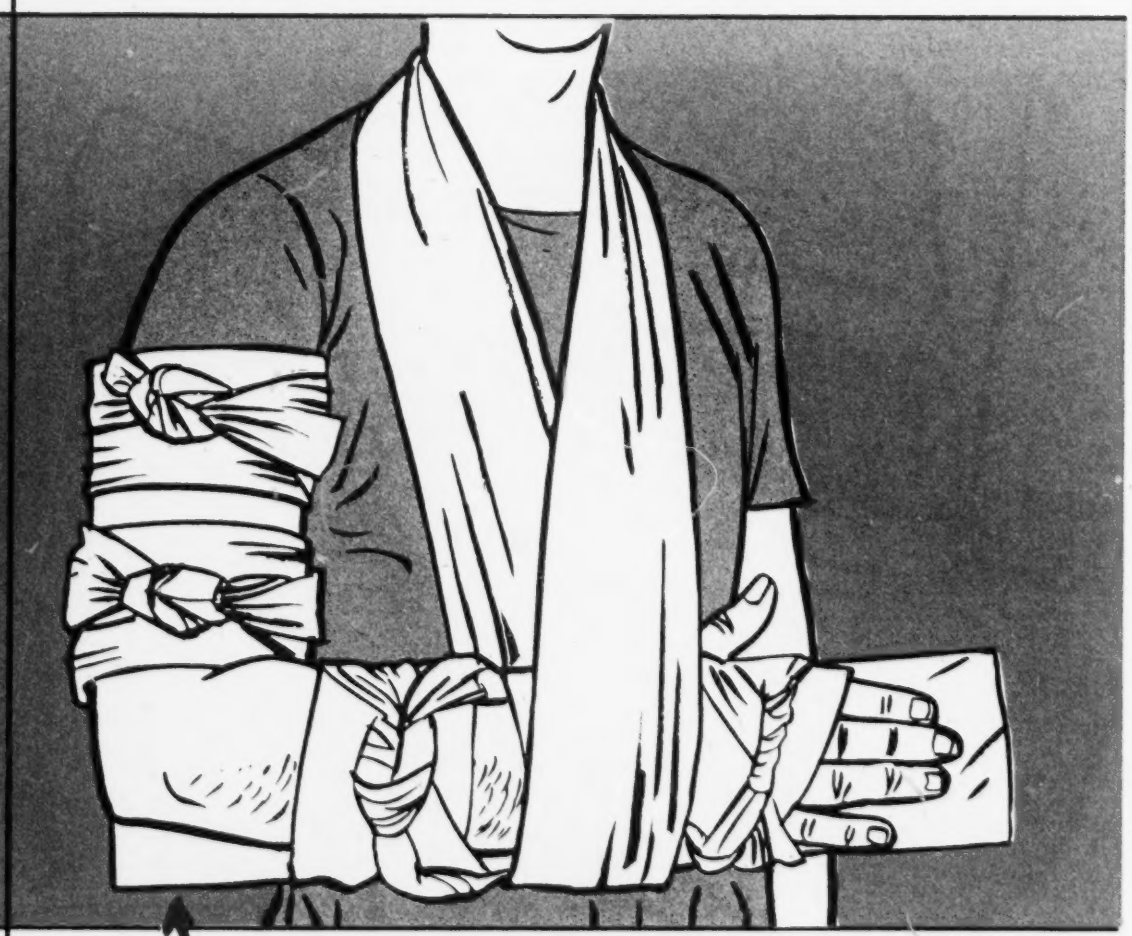
Upper Third of Arm



Wide cravat bandage

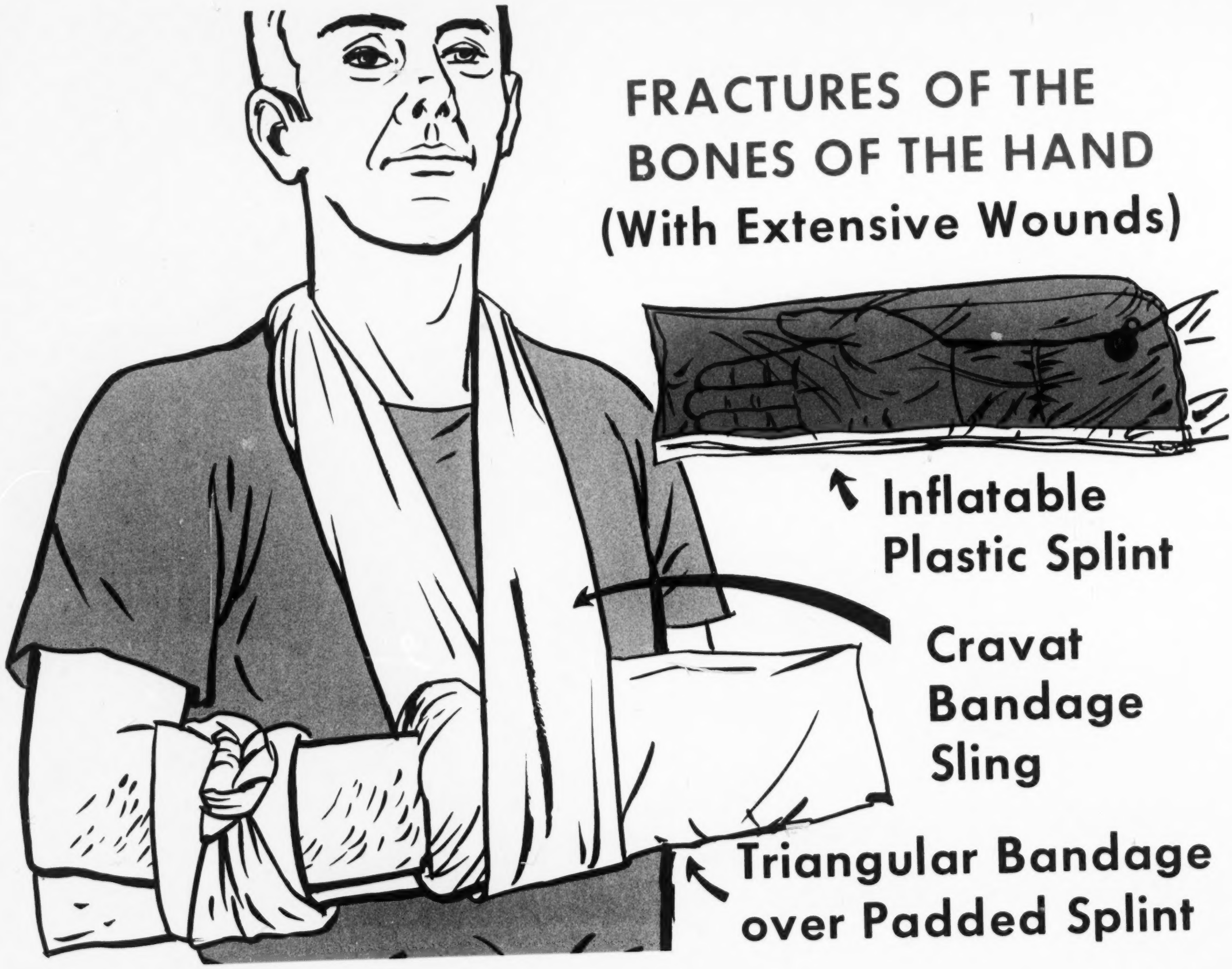
Triangular bandage sling

Elbow, Forearm or Wrist

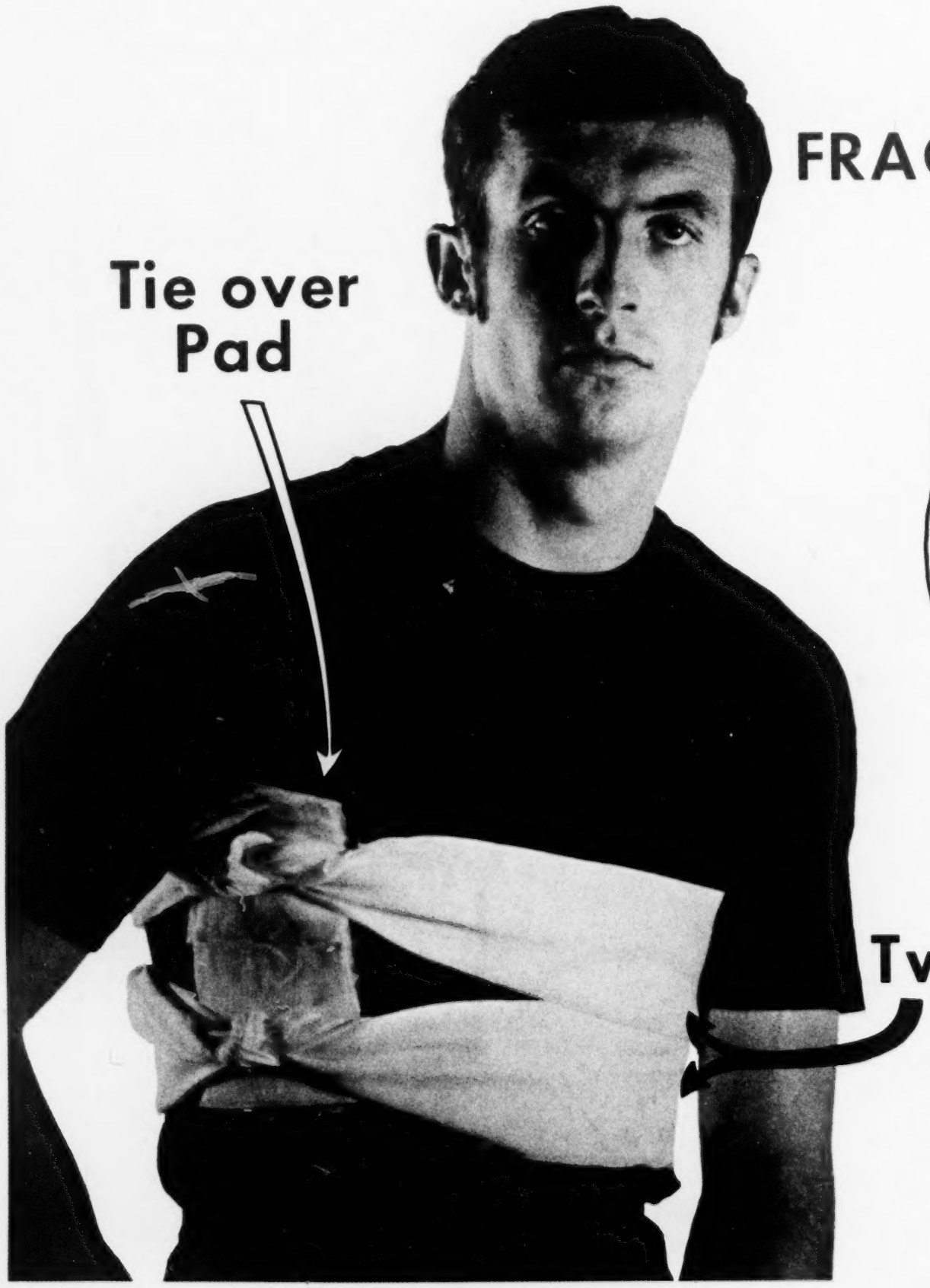


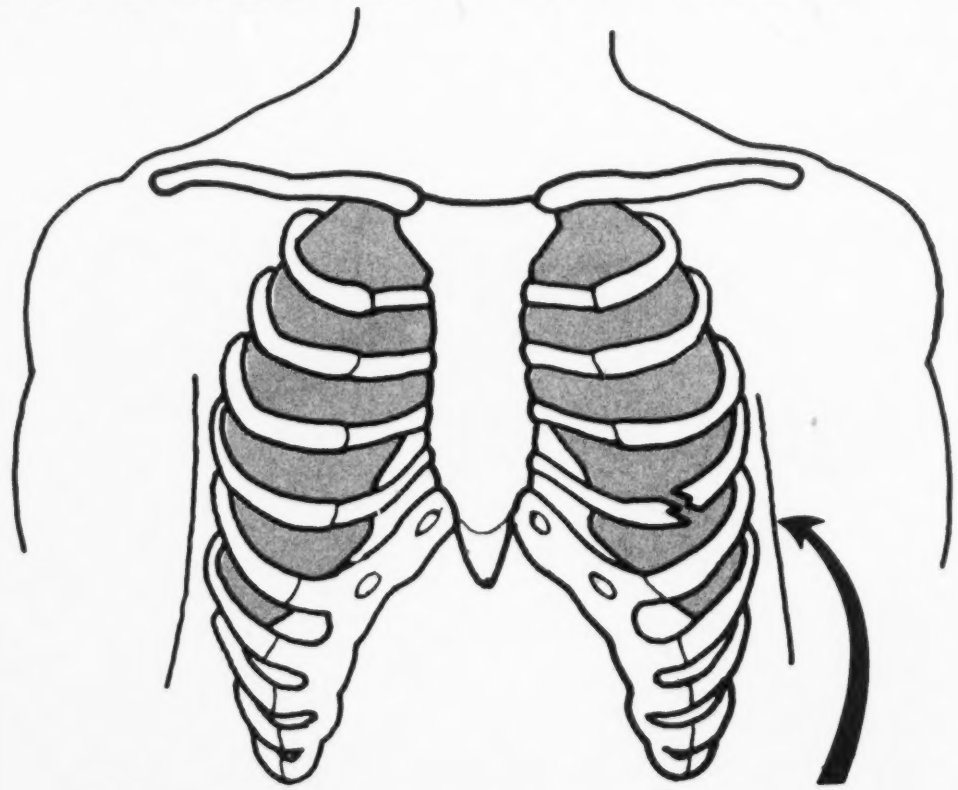
L- shaped padded splints (two)

FRACTURES OF THE BONES OF THE HAND
(With Extensive Wounds)



FRACTURES OF THE RIBS



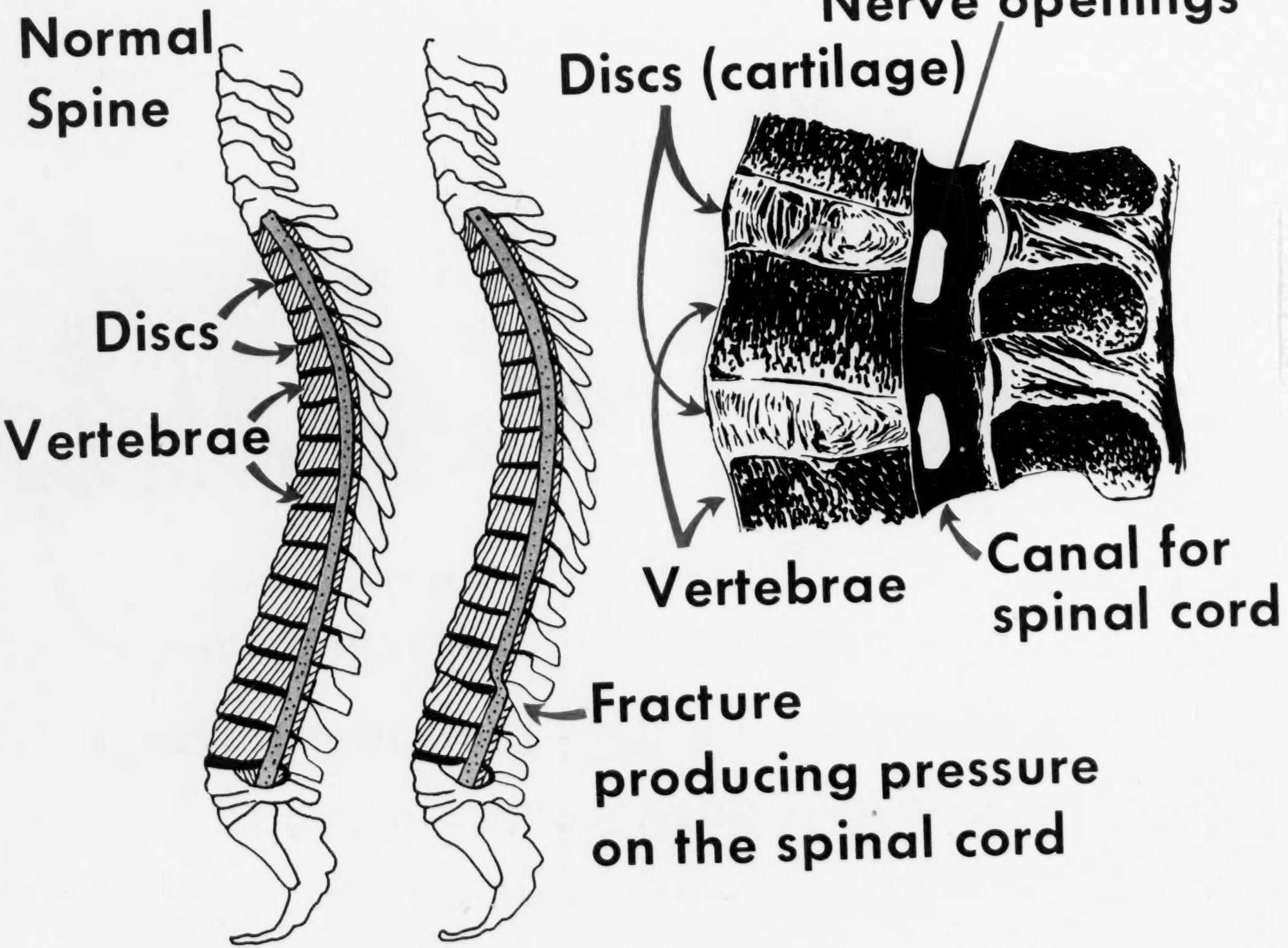


Fracture over Lung

Two Cravat Bandages

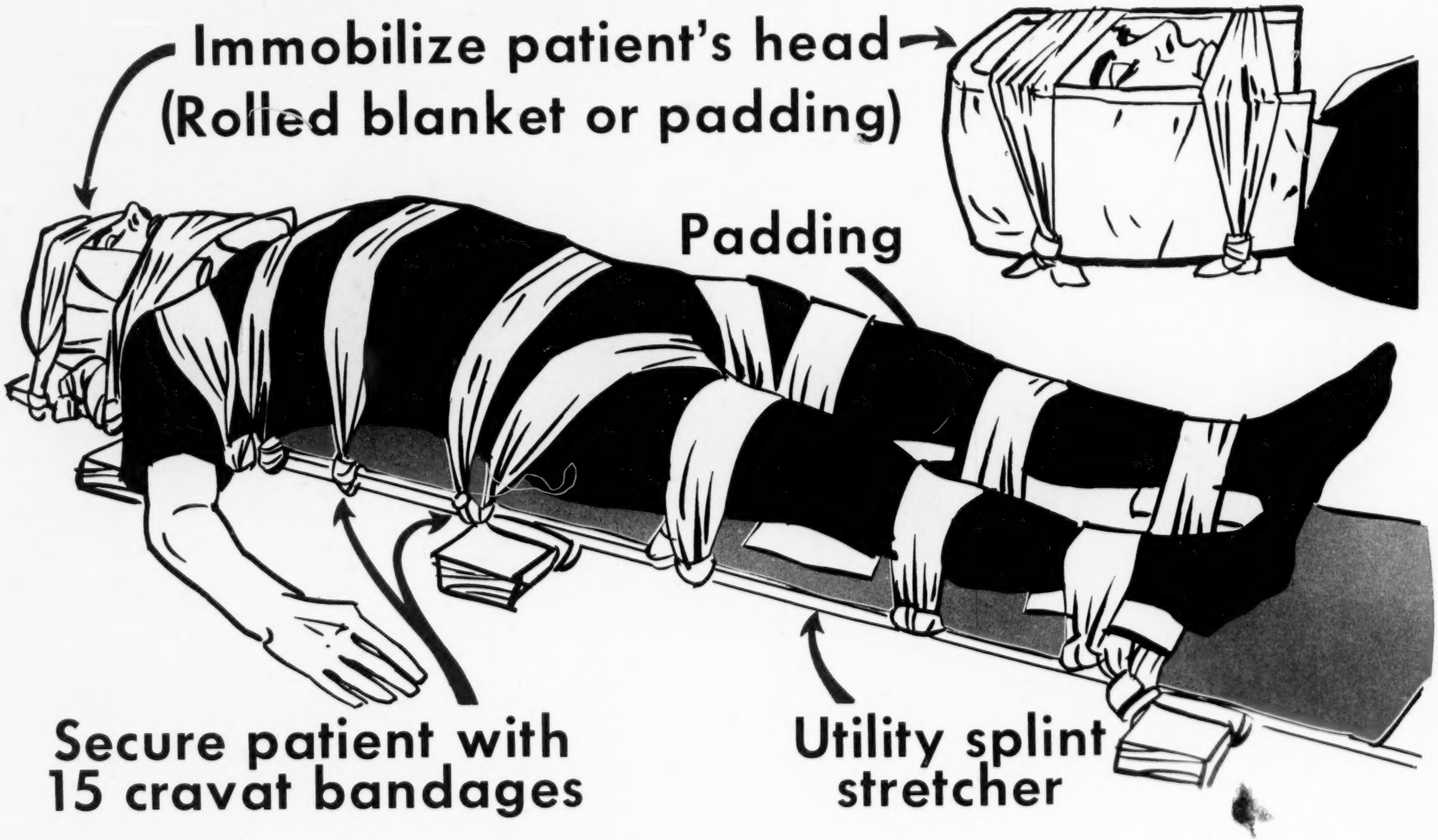
CAUTION: Do not wrap the chest if ribs are depressed

FRACTURES OF THE BACK AND NECK



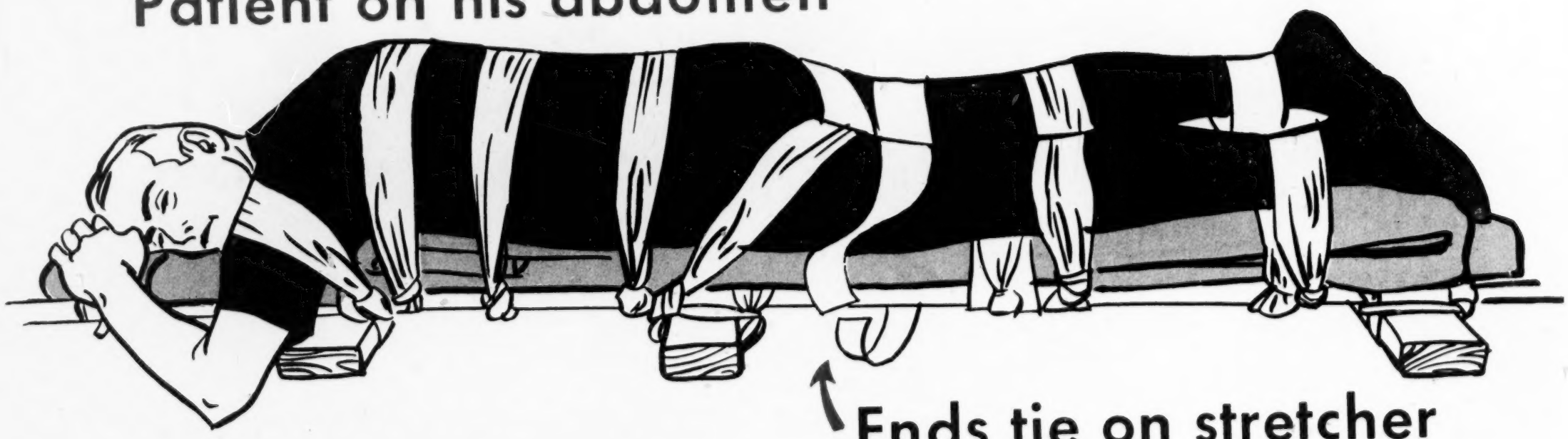
FRACTURES OF THE NECK
Positioning for Transportation

Place the patient face up on the stretcher



FRACTURES OF THE BACK
Positioning for Transportation
Do not turn the patient

Patient on his abdomen



Ends tie on stretcher

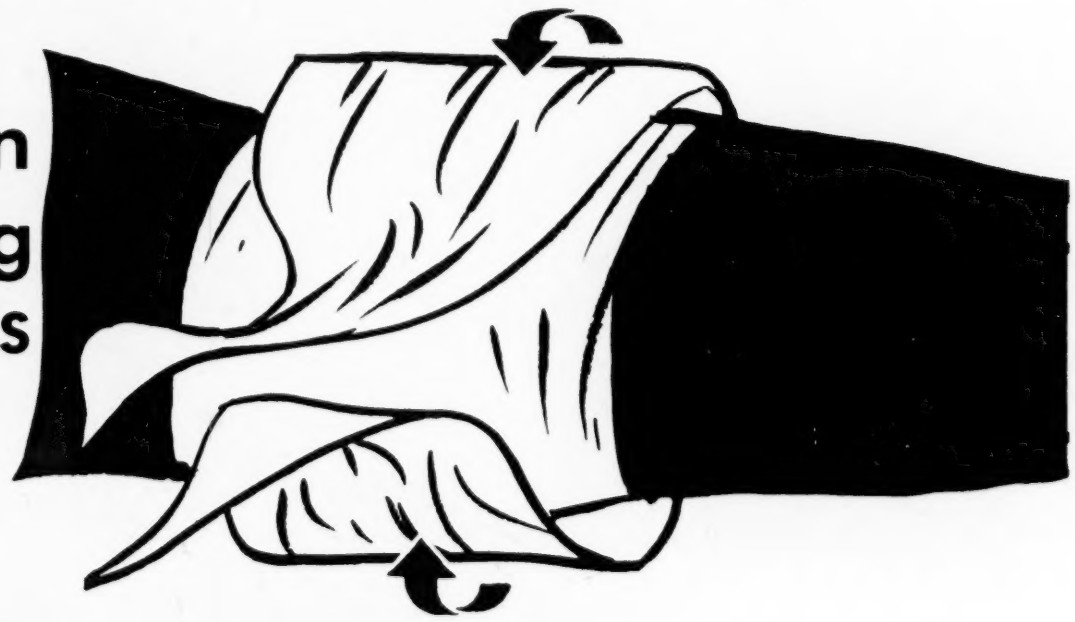
Patient on his back

Padding

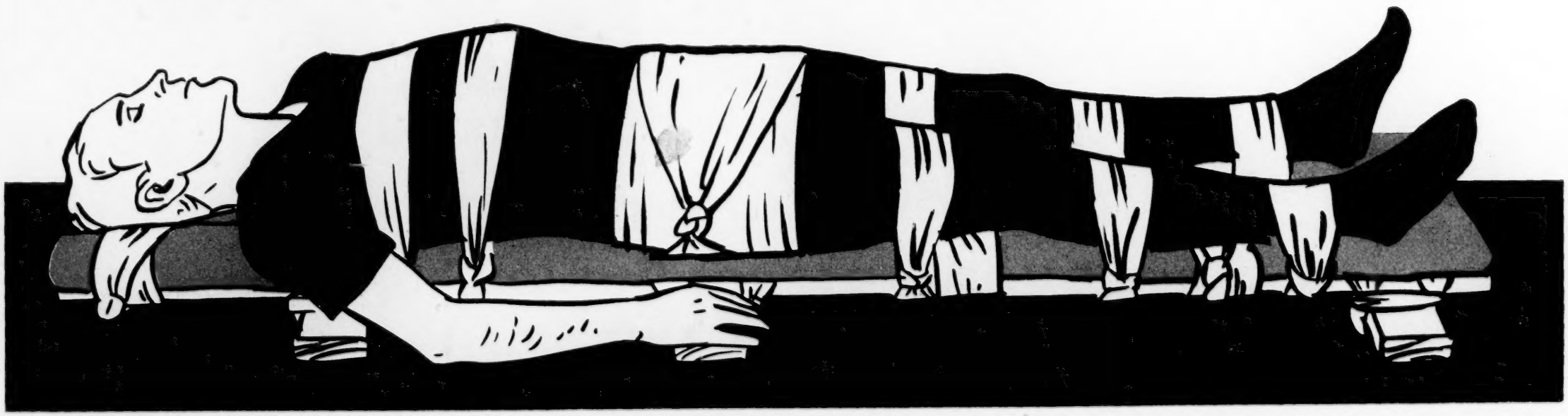
FRACTURES OF THE PELVIS

Do not move the patient until cravat bandages have been applied to the pelvis

Wrap pelvis in overlapping cravat bandages

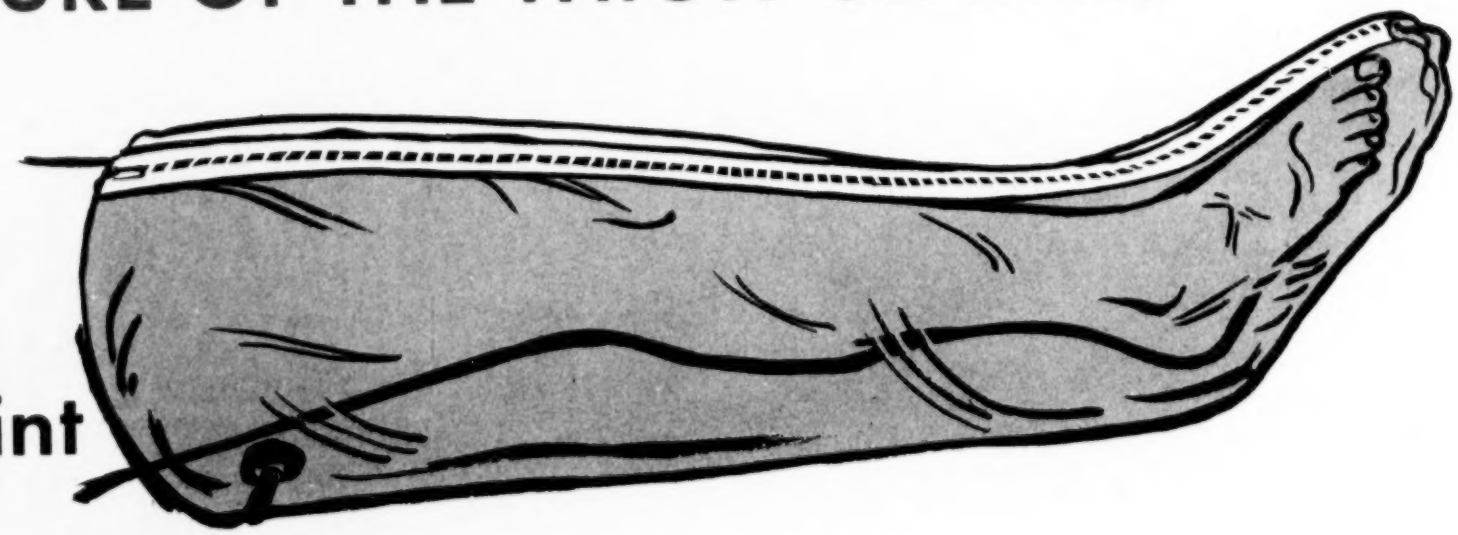


Secure with 8 cravat bandages



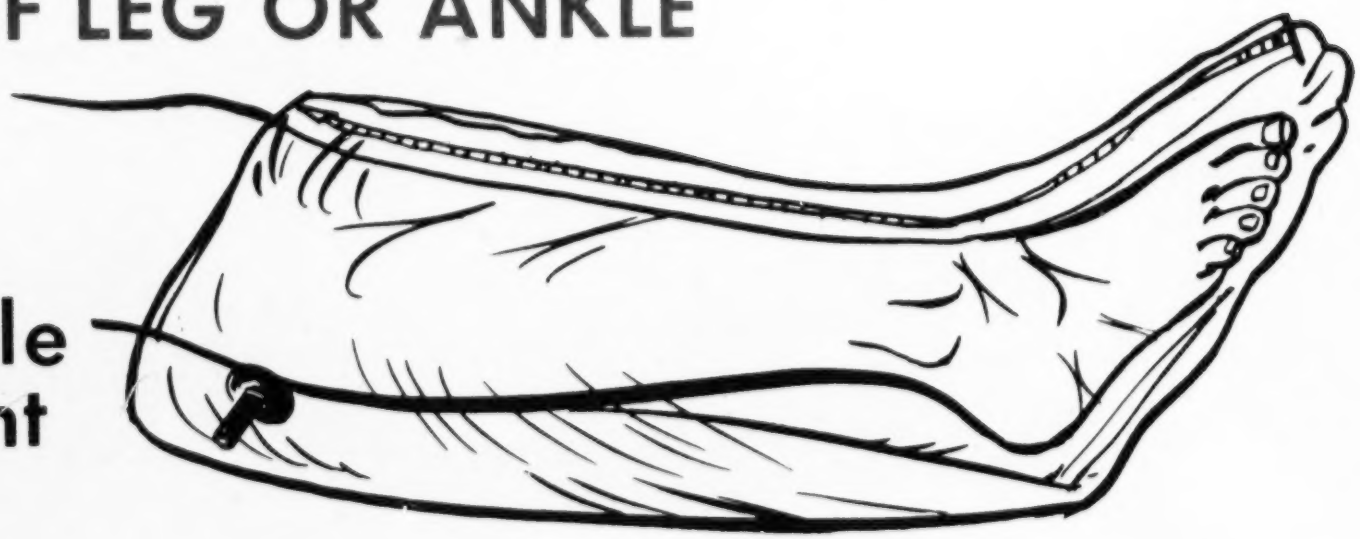
FRACTURE OF THE THIGH OR KNEE

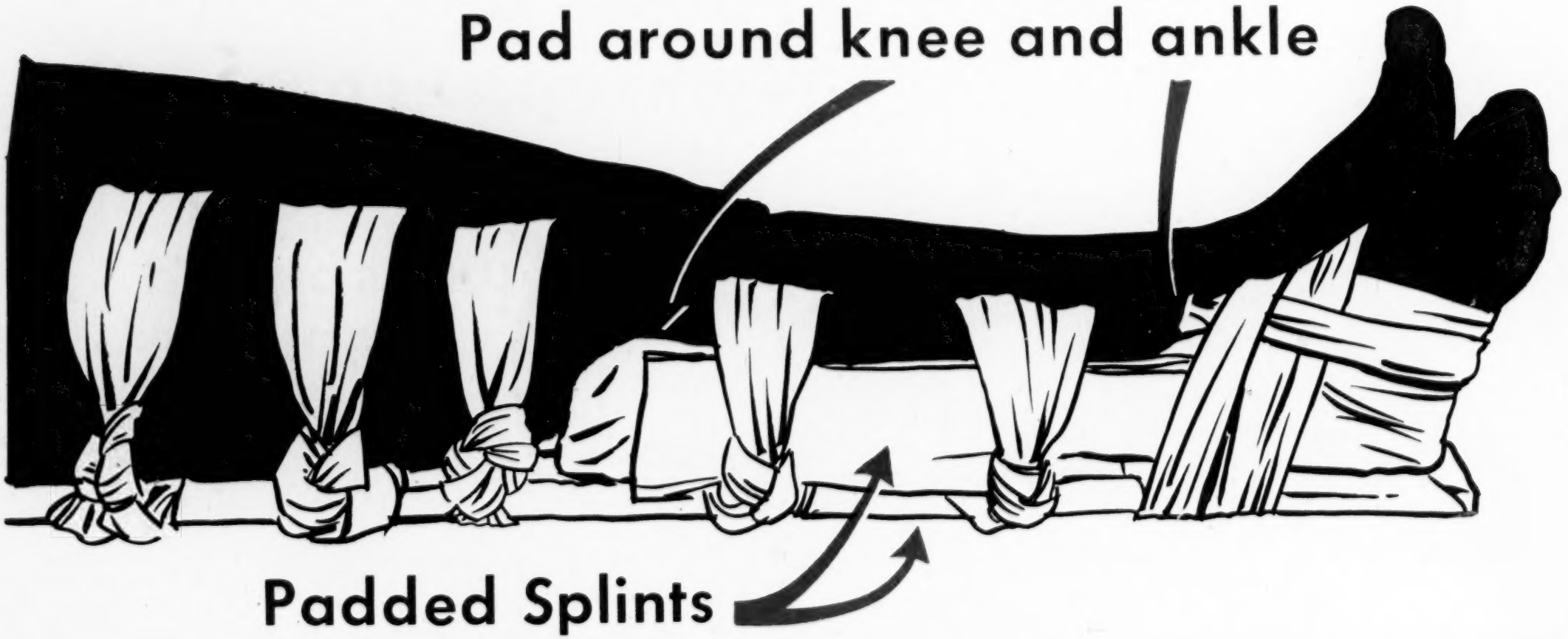
Using an inflatable plastic splint



Using a stretcher splint

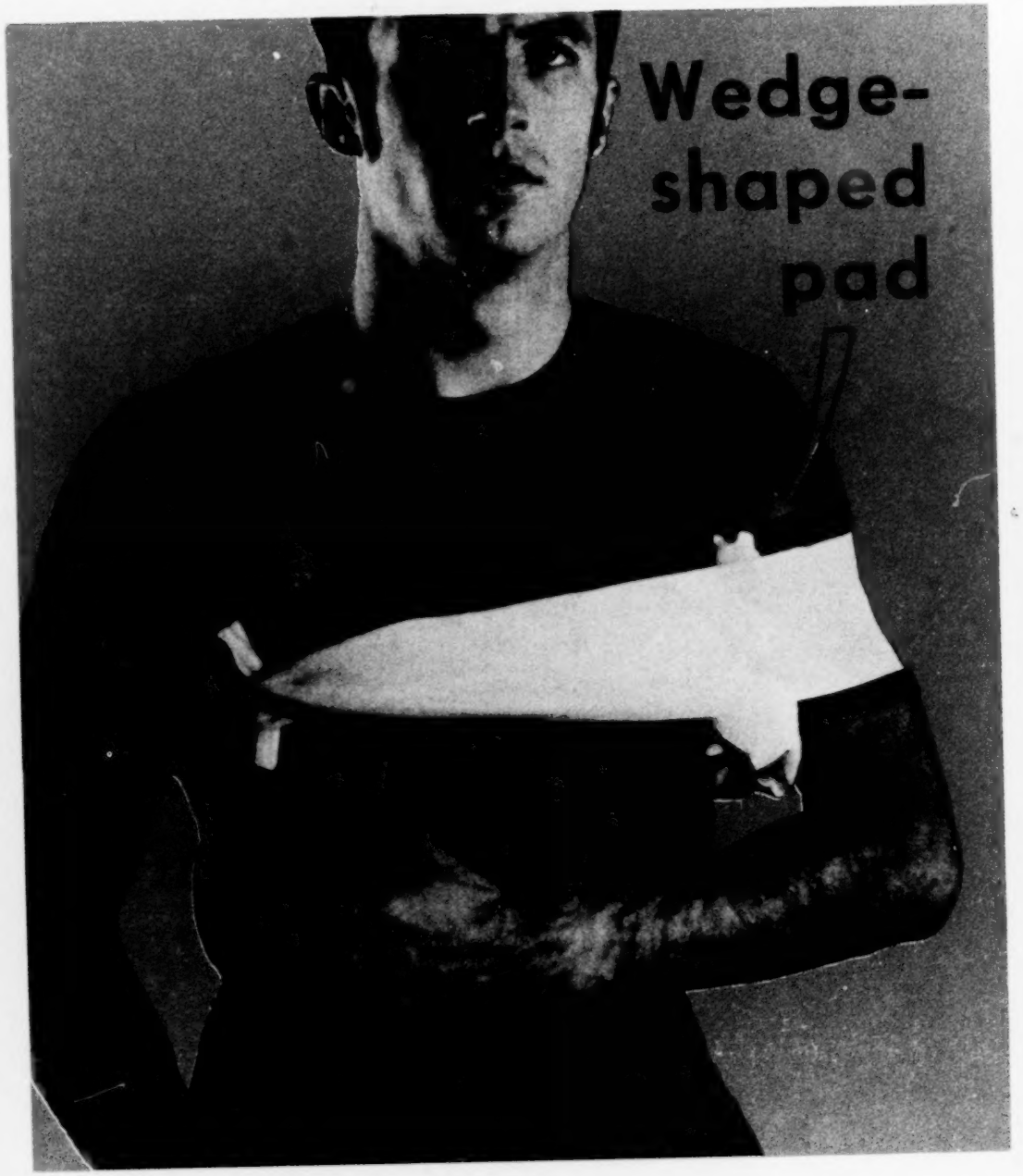
FRACTURE OR DISLOCATION OF LEG OR ANKLE





DRESSING: DISLOCATION OF THE SHOULDER

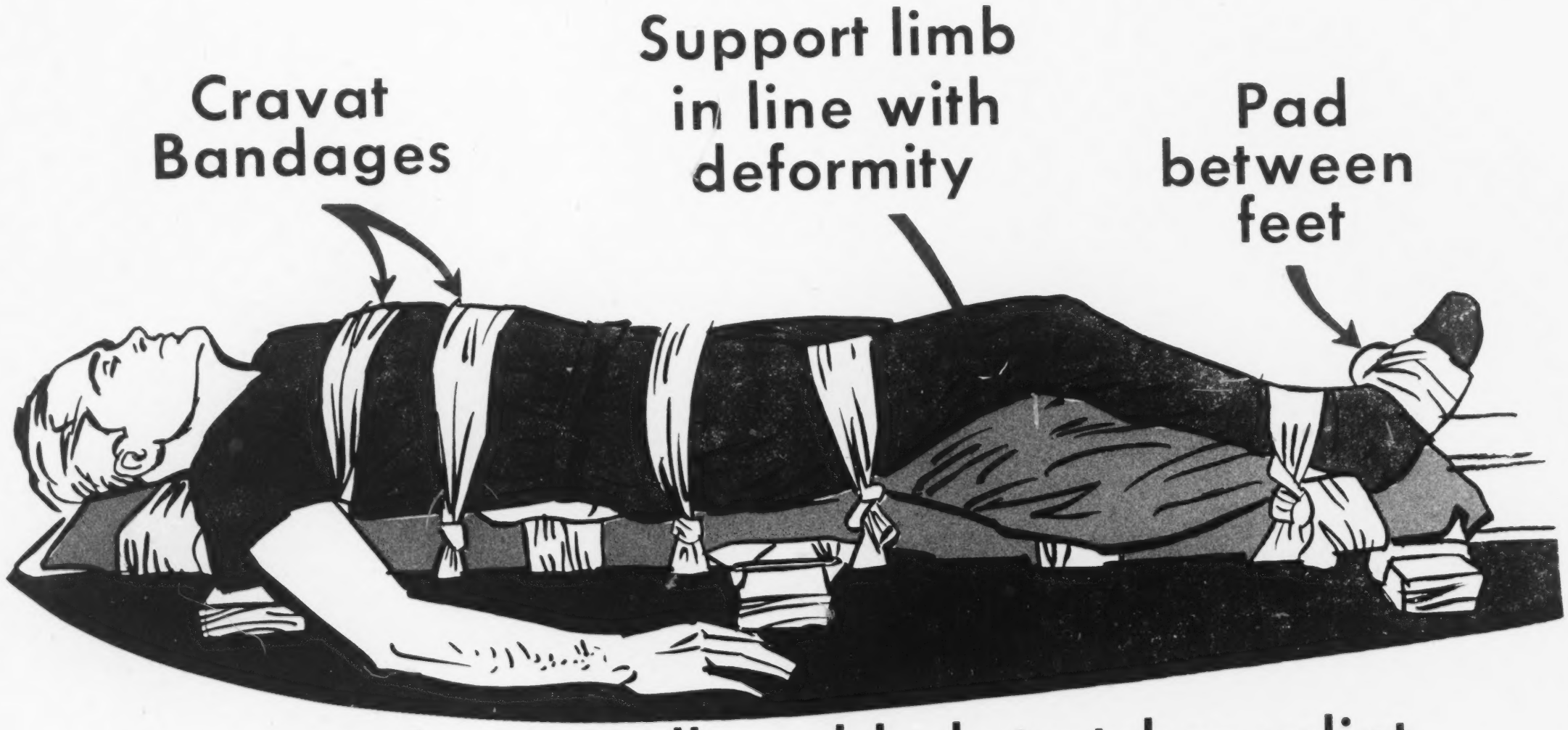
Position of Cravat Bandage



Position with Sling

FRACTURES OF THE TOES AND FOOT

DISLOCATION OF HIP



Tie securely on well-padded stretcher splint

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Transportation

SIXTH FUNDAMENTAL

INSTRUCTOR'S OUTLINE

Average Time: One-half Hour

HANDLING AND TRANSPORTATION OF THE INJURED

The Sixth Fundamental of First Aid

It is often impossible for medical help to come to an injured person where he is. For one thing, medical equipment is both delicate and cumbersome; it cannot be moved easily from one location to another. And, too, the site of an accident is seldom an ideal location for providing proper medical care. It may be both hazardous and non-sterile.

For this reason, a seriously injured person must often be transported to a medical facility after first aid treatment has been administered. The sooner he can be moved, the better. It is normally the responsibility of the person giving first aid to see that the patient is transported safely and without being subjected to further injury, shock, or unnecessary pain.

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Moving a patient is precise work. It calls for close teamwork and great care. Even the act of placing the patient on a stretcher demands coordination and practice. The simple movements involved in lifting the stretcher-bound patient and walking with him call for specific procedures.

In this unit, the procedures and equipment required to transport an injured person safely have been outlined in detail. The instructor's outline which follows has been arranged to help make classroom presentation easy. It includes suggested demonstrations and student exercises. Supporting visuals (transparencies for overhead projection) have been provided to reinforce the instructor's presentation and to help clarify the techniques described.

Instructor's Notes

Visual No. 69
"Transportation of Injured Persons"

Use a *revelation shield* when presenting this visual. With a piece of paper or cardboard, cover the headings not yet discussed. Then, as each new subject is introduced, slide this "shield" down on the transparency, exposing the appropriate heading. This will help your students focus on the idea you're discussing and discourage them from reading ahead to topics not yet covered.

Suggested Comments and Order of Presentation

I. Handling and Transportation of the Injured

A. After receiving first aid treatment, a patient often requires immediate transportation from the site of the accident to a medical facility or a place of safety.

B. It is the responsibility of the person administering first aid to see that the patient is moved safely.

C. Proper handling is important. The patient must be moved in such a way that he is not subjected to further injury, shock, or unnecessary pain.

[Use visual here.]

D. There are two important rules to remember when transporting an injured person:

1. Never move the patient until he has been examined and his injuries have been protected by properly applied dressings.

2. Always transport seriously injured patients in a lying down position.

E. Stretchers should be used when they are available.

F. In emergencies or when a stretcher is not available, various *carries* may be used.

1. Carrying the patient in the arms, carrying him astride the back, and the two-man carry should be used only when it is positively known that no injury will be aggravated by such handling.

Visual No. 70
"Three-Man Lift and Carry"

II. Three-Man Lift and Carry

A. The most effective method of carrying a patient without a stretcher is known as the *Three-Man Lift and Carry*.

1. This carry is used to transport injured persons for short distances, or through narrow passageways.

2. The lift is also used to place an injured person on a stretcher.

3. Three men are required for this lift, and a fourth is desirable.

[Use visual here.]

4. *All movements must be done in unison*, with all members of the team moving at the commands of a leader (or one of the bearers).

a. When preparing to lift the patient, each bearer kneels on one knee near the patient's least injured side.

(1) One bearer is positioned opposite the patient's shoulders, another opposite his hips, and the third opposite his knees.

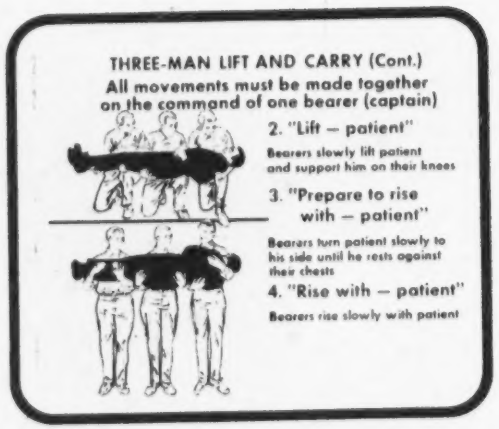
(2) Each kneels on the knee which is nearest the patient's feet.

(3) The bearer at the patient's shoulders places his hands under the patient's neck and shoulders.

(4) The bearer in the center places his hands under the patient's thighs and small of the back.

(5) The bearer at the feet places his hands under the patient's knees and ankles.

Instructor's Notes



Visual No. 71
"Three-man Lift and Carry"
(continued)

After discussing the steps used in the Three-Man Lift and Carry, break the class up into five-man teams. Have one man act as the patient and one serve as the leader giving commands. Rotate the members of the teams so each has a chance to practice lift-and-carry procedures.

Stress the importance of moving in unison. Every movement must be made together to avoid unnecessary pain to a patient.

Suggested Comments and Order of Presentation

[Use visual here.]

b. At the command, "Lift Patient," they slowly raise the patient and support him on their knees.

c. At the command, "Prepare to rise with patient," the bearers slowly turn the patient onto his side so that he rests in the bend of their elbows, close to their chests.

d. With the command, "Rise with patient," all rise slowly.

e. The bearers can now, on command, step off in any direction with the patient.

Instructor's Notes	Suggested Comments and Order of Presentation

III. Types of Stretchers

A. Several types of stretchers are used to transport injured persons. Each has certain characteristics which you should understand in order to use it properly.

1. The *Army Stretcher* is the most often used. It consists of two poles, held apart by folding crosspieces, and covered with stretched canvas or similar material.

   a. The poles are long enough to afford hand holds for bearers on each end.

2. The *Stokes Navy Stretcher* is a woven wire basket made to conform to the human body.

   a. The patient is strapped in the basket securely.

   b. Once strapped in the stretcher, he may be placed in any attitude, including the vertical position, for transportation.

   c. This stretcher is ideal for moving a patient up a narrow vertical passage. It is used almost exclusively in metal mines or in coal mines where the coal bed has a steep pitch.

3. The *MSA Jenkins Stretcher* is made of high grade marine plywood and hinged in the center lengthwise for easy storage.

   a. This stretcher acts as a splint for the entire body.

   b. When the patient is secured by means of the eleven nylon straps it has, he may be carried in any position.

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Instructor's Notes

Suggested Comments and Order of Presentation

4. The *Greene Rescue and Transport Stretcher Splint* is a prefabricated aluminum stretcher which can be assembled around the patient where he lies. There is no need to move him.

   a. This stretcher has only a few parts and may be constructed quickly without moving the patient.

   b. Once constructed, it secures the patient safely and may be used in any position, including the vertical position for moving the patient up narrow passages.

5. *Stretcher boards* are straight boards usually about 78 inches long, 18 inches wide and 1½ inches thick. They have slots about one inch wide in the sides which may be used as hand holds.

   a. The slots also are used to tie cravat bandages securing the patient to the stretcher.

   b. Stretcher boards have the advantages of light weight, easy storage and simplicity of application.

   c. All stretcher boards should be well-padded and tested before a patient is placed on them.

6. *Improvised stretchers* may be prepared from two long poles or pieces of pipe (7 to 8 feet long) and strong material such as a blanket, brattice cloth or a strong sheet.

   a. To make one of these stretchers, place one pole about one foot from the center of the unfolded blanket (or other material).

If the materials are available, prepare an improvised stretcher for the class. Use a blanket or bags, or improvise a stretcher using coats or jackets. Demonstrate the proper method for testing this type of stretcher.

b. Fold the short side of the blanket over the pole to the other side.

c. Place the second pole or pipe on the two thicknesses of blanket about two feet from the first pole and parallel to it.

d. Fold the remaining side of the blanket over the second pole toward the first pole.

e. When the injured person is placed on the blanket, the weight of the body will secure the folds.

f. Other materials that may be used as stretcher beds are cloth bags, sacks, coats, or jackets.

(1) If bags or sacks are used, rip the bottoms so that the poles may be passed through them. Use enough to give the length of bed required.

(2) When using coats or jackets, turn them inside out and pass the poles through the sleeves. Then turn down the flaps around the poles and buttom them underneath.

g. Always test an improvised stretcher carefully before placing an injured person upon it.

7. The *Bureau of Mines Utility Splint Stretcher* has already been discussed in the unit dealing with fractures and dislocations.

a. It is constructed from two long boards 78 inches by 6 inches by 1 inch, and three crosspieces 21 inches by 4 inches by 1½ inches.

b. The long boards are spaced two inches apart. The first crosspiece is positioned 15 inches from the head end of the long boards and permanently fastened by wood screws.

Instructor's Notes

Suggested Comments and Order of Presentation

c. At the foot end, a crosspiece is permanently fastened two inches from the ends of the long boards.

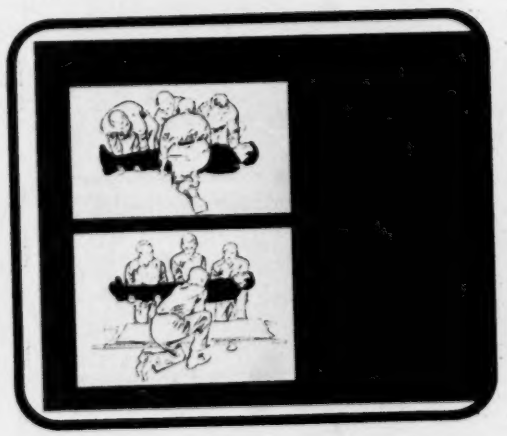
d. The center crosspiece is not attached so that it may be moved.

e. Two pipe runners are attached to the under surface of the crosspieces where they project beyond the long boards. These pipes should be threaded and capped at both ends.

f. Detailed instructions concerning the preparation of this stretcher can be found in the Bureau of Mines First Aid Manual. It can be easily assembled and provides an excellent means of transporting injured patients safely.

Instructor's Notes

Stress the importance of testing *all* stretchers before they are used for a patient.



Visual No. 72
"Using a Stretcher"

Suggested Comments and Order of Presentation

IV. Stretcher Transportation

A. No matter what type of stretcher is used, it should be tested thoroughly before placing a patient on it.

1. Testing should be done with someone on the stretcher who weighs as much or more than the patient.

B. Extreme care should be taken when placing a patient on a stretcher; otherwise he may suffer unnecessary pain.

[Use visual here.]

1. The bearers should work together, making each move in unison at the command of a leader.

2. When placing the patient on a stretcher, the three-man lift described earlier should be used. A fourth man is required to help lift the patient and to place the stretcher under him.

   a. If there is an injury to the neck, back or pelvis, the patient is lifted only high enough to slide the stretcher under him.

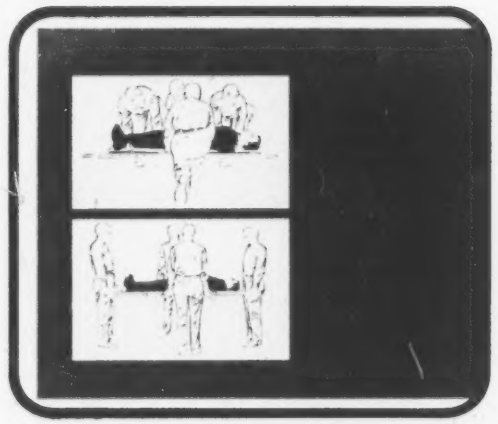
C. When preparing to lift the patient onto a stretcher, each of the four men kneels on one knee near the patient. They kneel on the knee nearest the patient's feet.

1. One man kneels opposite the patient's shoulders, another opposite his knees, and the third and fourth facing each other at his hips.

2. The man at the shoulders places his hands under the patient's neck and shoulders.

3. The man at the knees places his hands under the patient's knees and ankles.

Instructor's Notes



Visual No. 73
"Using a Stretcher"
(continued)

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Suggested Comments and Order of Presentation

4. Both men at the hips place their hands under the patient's pelvis and small of the back.

D. At the command, "Lift patient," the bearers slowly raise the patient, taking care to keep his body level.

1. At the end of this movement, the patient should be supported on the knees of the three men on one side.

2. The fourth man places the stretcher under the patient.

[Use visual here.]

E. Again on command from the leader, the fourth man places his hands in position to support the patient and, on command, the bearers lower the patient gently to the stretcher.

F. When the patient is secured to the stretcher, the four bearers take positions at the head, the foot, and on both sides at the center of the stretcher.

1. On command, all bearers stoop and grasp the stretcher and raise it together.

2. On command, the two bearers in the center shift one hand toward the front of the stretcher and support this end while the man at the foot turns around to a marching position.

G. The patient is carried on the stretcher feet first.

1. The exception to this comes when there is severe bleeding at the patient's head. If he must be moved up a steep incline or steps, he should be transported head first.

Instructor's Notes

Reassemble the five-man teams and have them practice the procedures used to place the patient on a stretcher. They should also practice lifting and marching with the stretcher and patient.

THE DISCUSSION OF HANDLING AND TRANSPORTATION OF THE INJURED ENDS HERE. On the next few pages are a series of oral questions which may be used to evaluate the student's knowledge and retention of the information presented in this portion of the course.

Suggested Comments and Order of Presentation

H. On command, the bearers should step off with the stretcher in unison.

1. The bearers at the foot and on the sides of the stretcher step off on their left foot first.
2. The bearer at the head steps off on his right foot first. This will prevent the stretcher from swaying.

HANDLING AND TRANSPORATION OF THE INJURED

The Sixth Fundamental of First Aid

The following questions will help you evaluate the student's retention of the principles and techniques covered in this section of the course. They have been prepared for oral presentation in the classroom. Open discussion of the questions should be encouraged.

There are three parts to this series of questions: each requires a different type of response from the student. The first section calls for a *true-false* response and includes correct answers for the instructor's use. Section two is a *completion* test in which the instructor reads a partial statement and asks the students to provide the missing information.

The third part of the test includes *multiple-choice* questions. The students are asked to select one of three alternative answers given for each question. Only one of the alternatives is correct.

I. True or False

Some of the following statements are correct; others are not. If you believe a statement to be accurate, answer it *true*. If you feel it is inaccurate, answer *false* and explain why you believe it is wrong.

Question	*Correct Answer*
1. One of the purposes of the Three-Man Lift and Carry is to transport injured persons through vertical passages.	False (Narrow passage)
2. When using a stretcher, the man at the head moves first.	False (All bearers move in unison)
3. The Stokes Navy Stretcher with the patient secured, can be transported in any position	True
4. With an improvised stretcher, the weight of the patient secures the folds of a properly placed blanket.	True
5. Three men are needed to place a patient on a stretcher.	False (Four men are required to lift the patient. One of the men then places the stretcher under the patient)

II. Completion Questions

Complete the following statements by adding the correct word.

Question	*Correct Answer*
1. Always transport seriously injured patients in a _____ position.	Lying down
2. With the Three-Man Lift and Carry, one man kneels at the patient's shoulders, one kneels at the patient's hips, and one at the patient's _____.	Knees
3. When using a stretcher, the bearers at the foot (front) and two sides step off on their _____.	Left foot
4. When transporting a patient with a severely bleeding head wound up a steep incline, he should be carried _____.	Head first
5. When lifting or moving a patient, all bearers must move in _____.	Unison

III. Multiple Choice

Three answers are given for each of the following questions; only one of them is correct. Listen to the question and the three alternative answers and select the one you believe is most accurate.

Question *Correct Answer*

1. With a Three-Man Lift and Carry, the command, "Prepare to rise with patient" refers to . . .
   a. Supporting the patient on the bearers knees.
   b. Turning the patient on his side to the bearers chest.
   c. Getting into a standing position with the patient.

   Answer: b.

2. The stretcher made of two long poles with canvas stretched between is called . . .
   a. A stretcher board.
   b. An improvised stretcher.
   c. An Army stretcher.

   Answer: c.

3. Every stretcher should be tested before placing the patient on it. The testing should be done by . . .
   a. The bearer at the head of the stretcher.
   b. The largest bearer.
   c. Someone who weighs as much or more than the patient.

   Answer: c.

4. Never move a patient to a stretcher until he has been examined and his injuries have been . . .
   a. Recorded on a piece of paper.
   b. Protected by properly applied dressings.
   c. Seen by a doctor.

   Answer: b.

TRANSPORTATION OF INJURED PERSONS

CAUTION: To prevent further injury and shock, extreme care must be taken when moving an injured person

1. Do not move a patient until:
   - He has been examined to determine the extent of injury
   - Wounds have been properly dressed
2. Seriously injured patients should be moved in a prone (lying down) position

THREE-MAN LIFT AND CARRY

All movements must be made together on the command of one bearer (captain)

Command: 1. "Prepare to lift — patient"

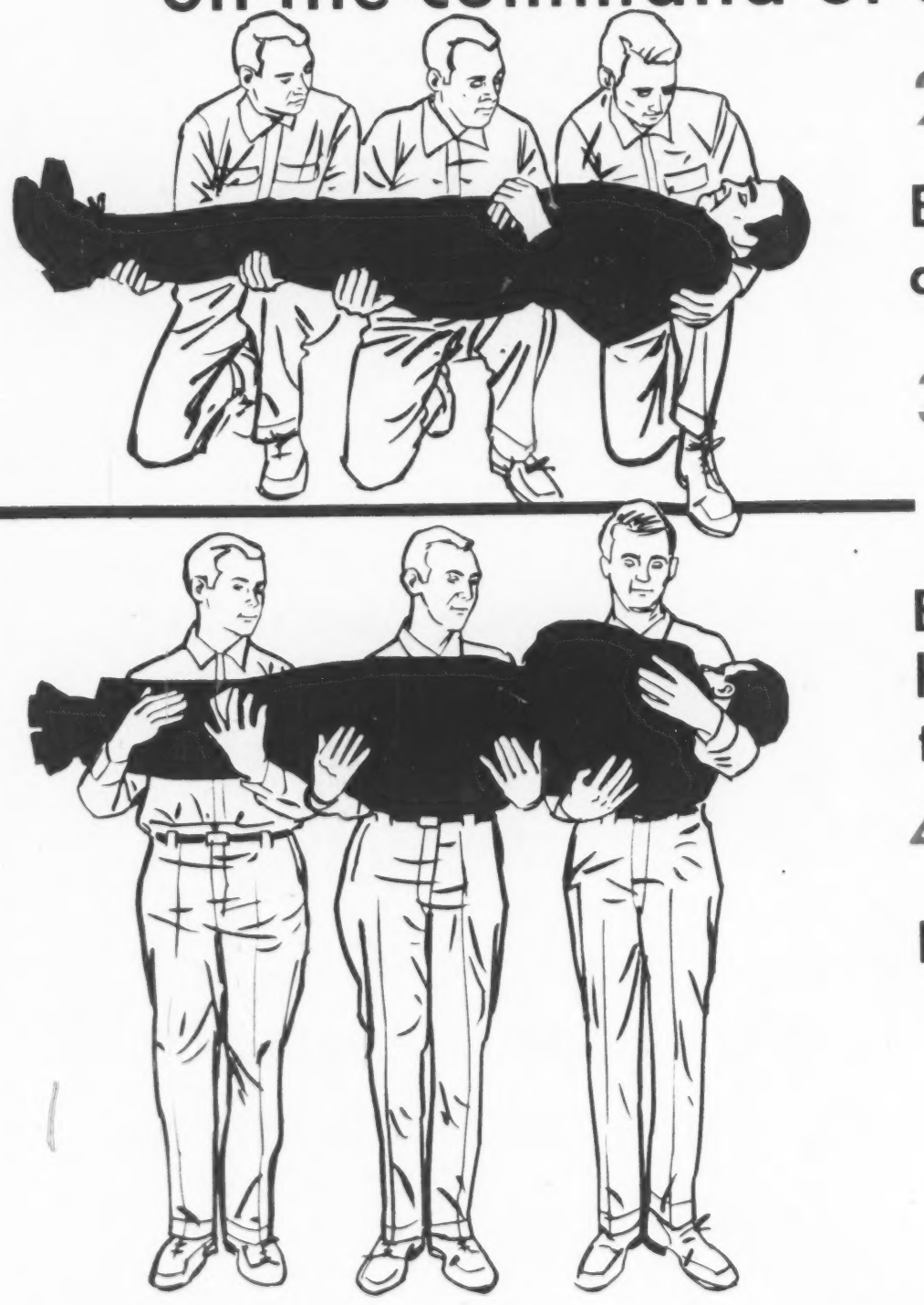
THIRD MAN: Positions hands under patient's ankles and knees

SECOND MAN: Positions hands under thighs and small of back

FIRST MAN: Positions hands under shoulders and neck

THREE-MAN LIFT AND CARRY (Cont.)

All movements must be made together on the command of one bearer (captain)



2. "Lift — patient"

Bearers slowly lift patient and support him on their knees

3. "Prepare to rise with — patient"

Bearers turn patient slowly to his side until he rests against their chests

4. "Rise with — patient"

Bearers rise slowly with patient

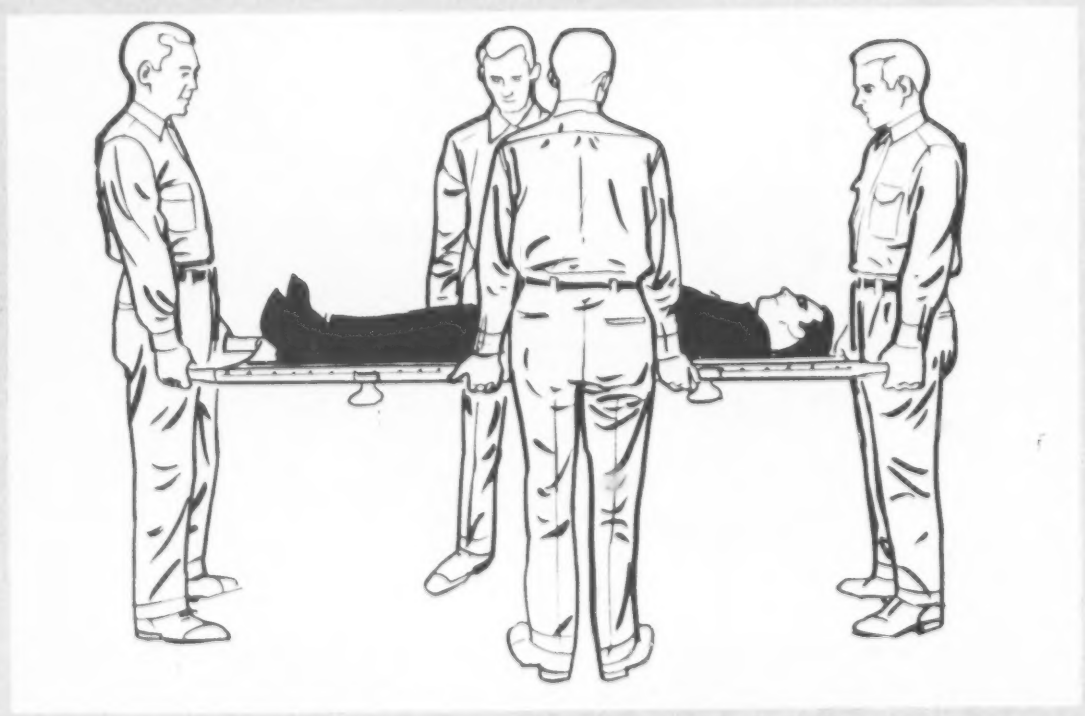
USING A STRETCHER

1. Prepare to lift the patient

2. With patient resting on bearers' knees, position the stretcher

USING A STRETCHER (Cont.)

3. Lower the patient to the stretcher



4. Lift stretcher slowly

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The transparencies to be used with a wall viewer may be obtained at the

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